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WORKING PLAN
FOR
THE CUDDALORE SOUTH DIVISION
1966 TO 1976

By
Thiru K. R. VENKATESAN, B.Sc., (Hons.), I.F.S.
State Silviculturist

under the direction of the
CHIEF CONSERVATOR OF FORESTS, MADRAS

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GOVERNMENT OF TAMIL NADU
1972

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CONTENTS

PART I

CHAPTER I—THE TRACT DEALT WITH.

Sections.		Pages.
1	Name and situation	1
2	Configuration of the ground	1
3	Geology, rock and soil	2
4	Climate and rainfall	6
5	Water-supply	8
6	Distribution and area	8
7	State of Bounderies	11
8	Legal position	11
9	Rights and Concessions	11

CHAPTER II—THE FOREST.

1	Composition and condition of the crop	11
2	Injucies to which the crop is liable	17

CHAPTER III—UTILISATION OF THE PRODUCE.

1	Agricultural customs, wants of the population and Industrial Needs	20
2	Markets and Marketable products	23
3	Lines of export	23
4	Method of exploitation and their costs	25

CHAPTER IV—STAFF AND LABOUR SUPPLY.

1	Staff	27
2	Labour supply	27

CHAPTER V—PAST SYSTEMS OF MANAGEMENT.

1	History of the Forests	28
2	Past systems of management and their results	31
3	Special works of improvement undertaken	49
4	Past yield and Revenue	52
5	Revenue and expenditure	53
6	Miscellaneous	57

CHAPTER VI—STATISTICS OF GROWTH AND YIELD.

1	Statistics relating to Cashew	57
2	Statistics relating to Casuarina	59
3	Statistics relating to Eucalyptus	59
4	Statistics relating to Sandalwood	60

PART II.

Future management discussed and prescribed.

CHAPTER I—BASIS OF PROPOSALS.

Sections.		Pages.
1	General objects of management ..	61
2	Method of treatment to be adopted	61
3	Working Circles and their area ..	61
4	Period of the Working Plan	61

CHAPTER II—WORKING PLAN FOR CASHEW WORKING CIRCLE.

1	General Constitution	62
2	Area and Distribution	62
3	Analysis of the crop	66
4	Method of treatment	66
5	Regeneration	67
6	Subsidiary silvicultural regulations	68
7	Other regulations ..	72

CHAPTER III—WORKING PLAN FOR THE CASUARINA WORKING CIRCLE.

1	General constitution	74
2	Division of the area	74
3	Method of treatment	74
4	Felling and Regeneration	74
5	Subsidiary silvicultural regulations	78
6	Other regulations ..	79

CHAPTER IV—WORKING PLAN FOR EUCALYPTUS WORKING CIRCLE.

1	General constitution and character of the vegetation	79
2	Division of the area and Formation of Series	80
3	Method of treatments	81
4	Regeneration	81
5	Subsidiary silvicultural regulations	86
6	Method of executing the fellings..	86
7	Tabular statement of fellings ..	87

CHAPTER V—WORKING PLAN FOR SANDALWOOD WORKING CIRCLE.

1	General constitution	88
2	Division of the area	88
3	Analysis of the crop	89
4	Method of treatment	89
5	Method of executing the fellings	89
6	Subsidiary Silvicultural Regulations ..	90
7	Other Regulations	90

23 JUL

CHAPTER VI—WORKING PLAN FOR REHABILITATION WORKING CIRCLE.

SECTIONS.		PAGES.
1	General constitution	91
2	Division of the area	91
3	Method of treatment	91
4	Method of Regeneration	92
5	Subsidiary silvicultural Regulations	93
6	Other Regulations	94

CHAPTER VII—WORKING PLAN FOR THE MINOR FOREST PRODUCE WORKINC CIRCLE·

1	General constitution of the Working Circle	94
2	Method of Treatment	95
3	Subsidiary silvicultural Regulations	95
4	Other Regulation	95

CHAPTER VIII—WORKING PLAN FOR THE GRAZING WORKING CIRCLE.

1	General constitution	95
2	Method of treatment	95
3	Other regulations	96

CHAPTER IX—WORKING PLAN FOR THE SOIL CONSERVATION WORKING CIRCLE.

1	General constitution	96
2	Area and its Distribution	96
3	Analysis of the area	96
4	Method of Treatment	97
5	Subsidiary Regulations	100

CHAPTER X—MISCELLANEOUS REGULATIONS.

1	Farm Forestry	101
2	Red Sanders Plantations	109
3	Tamarind Plantation	109
4	Leucaena Plantations	110
5	Watering in casuarina Plantations	110
6	Miscellaneous Eucalyptus Trials	110
7	Mangroves	111
8	Fire Protection	111
9	Roads	111
10	Buildings and Wells	112
11	Unreserved lands	112
12	Boundaries	112
13	Manure Leaf	113
14	Rain Guages	113
15	Wild Life	113
16	Machinery	113

CHAPTER XI—ESTABLISHMENT AND LABOUR.

Sections.		Pages.
1	Establishment	114
2	Labour	114

CHAPTER XII—FINANCIAL FORECAST AND COST OF THE WORKING PLAN.

1	Financial Forecast	114
2	Cost of the Working Plan	115
	SUMMARY OF PRESCRIPTIONS	115—122
	APPENDICES	123—282

WORKING PLAN FOR THE CUDDALORE SOUTH DIVISION

FOR THE PERIOD FROM THE 1st APRIL 1966 TO THE 31st MARCH 1976.

PART I.

SUMMARY OF FACTS ON WHICH PROPOSALS ARE BASED.

CHAPTER I—THE TRACT DEALT WITH.

SECTION I—NAME AND SITUATION.

Name.—This working plan deals with the Cuddalore South Forest Division. The Division is named after the principal town, Cuddalore and comprises the forests of the southern half of South Arcot District.

2. *Situation.*—The Cuddalore South Division is situated in the southern part of the South Arcot district and consists of Cuddalore, Chidambaram and Vriddhachalam Taluks and parts of Villupuram, Tirukoilur and Kallakurichi taluks. The boundary description is given in Appendix II. The division falls between the latitudes 10 °5′ N and 12° N and 12°N and the longitudes 78° 49′ E and 79° 39′ E.

SECTION 2—CONFIGURATION OF THE GROUND.

3. The division is, for the most part, a flat plain slopping gently from the north to south and from west to east towards the sea. The only hills in it are the Kalrayans on the western border and the Mount Capper hill near Cuddalore.

4. *The Kalrayans.*—The Kalrayans which divides this district from the Salem district and of moderate height, their general level being about 600 metre to 900 metre. They rise abruptly from the surrounding country. The portion of this range of hills lying in this division is about 40 metre in length and 20 kilometre in breadth. From a distance the hills appear like a great wall shutting off the country from west. At the southern end of this range lies the historic pass, the Attur pass, leading into Salem. A strong cool breeze blows through this pass during the south-west monsoon.

5. Though the range looks level from below, it contains no true plateau. Its valleys are eroded into basin-shapped depressions. Its general slope is towards the east in which direction flow the chief streams which drain it, namely, the Manimuktanadi, Gumukhanadi and Mayuranadi. The valleys of these streams, notably the Tumbe valley down which flows the Manimuktanadi, are deep clefts with often precipitous sides.

6. The word Kalrayan is said to be a corruption of Kalvirayan. The story goes that five brothers named respectively Peria Kalvirayan, Chinna Kalvirayan, Kurumba Goundan, Jadaya Goundan and Ariya Goundan came from Conjeevaram and settled on the range, dividing it up among themselves. The south and south-western parts, which happen to be the highest of the whole, were taken by Periya Kalvirayan and so are called after him; the lower slopes to the west in Salem, and the part now in the Kallakurichi taluk was divided among the other three brothers Jadaya Gounden, Kurumba Goundan and Ariya Goundan giving their names to the southern, central and the northern portions of the hills. These appellations are still in use and hence the three sections of the range which lie in the Kallakurichi taluk are called the Jadaya Goundan Malai, the Kurumba Goundan Malai and the Ariya Goundan Malai. The

descendants of those three poineers reside respectively at Pottiem (west of Gomukhi Nadi Project) at Palaiyapalayapatti and at Pudur. Their jaghirs are divided into nads and comprise altogether 91 villages.

7. *The Mount Capper Plateau.*—The Mount Capper Plateau just west of Cuddalore, is par of a belt of red lateritic ground formed by the "Cuddalore Sandstones" which runs from a point about ten miles north of Pondicherry south-south-westwards to near Srimushnam. Mount Capper and the Red Hills which arise just west of Pondicherry are the only parts of it which can be called prominent features in the landscape and even these are only about 30 metre above the sea. For the rest, the course of the formation —where it has not been cut away by the rivers which pass through it may be traced by the red soil to which it gives rise. Mount Capper gets its name from Captain (afterwards Colonel) Francis Capper of the 'Native infantry' who built a house clearing away a thick jungle which reverted to the Government later. There seems to be now no trace of Captain Capper's house.

Besides the above more or less continuous range of hills, there are in the division a number of smaller isolated elevations like Kottalamalai, Thiyaga Durg, etc.

8. *Drainage.*—The division is drained by a number of rivers. The rivers, almost all of them, flow to the east into the Bay of Bengal. The chief of these, going from north to south, are the Pennaiyar, the Gadilam, the Uppanar, the Vellar and the Coleroon.

9. The Pennaiyar (the name Ponnaiyar is a corrupt English name) or the Pennar is a sacred river rising in Mysore State where it is known as Southern Pinakini. It enters Salem and South Arcot districts and falls into the sea a little north of Cuddalore.

10. The Malattar ("barren river") is supposed to have been the old bed of Pennaiyar but now ordinarily carries little water. During high floods, the Pennaiyar spills over into the Malattar and from this into the Gadilam. Attempts have been made to reclaim the sandy bed of this river by planting Casuarina.

11. The Gadilam rises in the Tirukoilur taluk, enters the Cuddalore taluk where the Malattar comes and joins it, flows past Panruti, Tiruvendipuram and Cuddalore and falls into the sea near Cuddalore. It is also called the Garudanadi.

12. The Uppanar or the Paravanar, rises in the Vriddhachalam taluk a little west of Neyveli and joints the Bay by the mouth of Gadilam just to the south of Cuddalore old town. It is largely a drainage channel.

12. (*a*) The Vellar is formed by the junction, about four miles west of Toludur, of two rivers, the Vashishtanadi and the Swetanadi, which rise in Salem district. It is joined by the Manimuktanadi, a considerable tributary above Settiatope. The Manimuktanadi is made up of Mani and Mukta streams which drain the northern part of the eastern slopes of the Kalrayans and by the Gomukhanadi and Mayuranadi which rise in the more southern portion of these hills.

SECTION 3—GEOLOGY, ROCK AND SOIL.

13. *Geology.*—The general geological formation of the district is simple. The greater part is covered with metamorphic rocks belonging to the gneiss family. Resting on these are the three great groups of sedimentary rocks belonging to different geological periods and overlying each other in regular succession from the coast on the east to the hills on the west. The lowest of these groups is the fossil bearing cretaceous limestones round about Vriddhachalam. Above this comes a younger group of sandstones called "the Cuddalore sand stones" which form the Mount Capper hills south west of Cuddalore. Uppermost are the alluvial beds of the deltas of the rivers. There is every reason to believe that this order of the strata has existed unaltered through a long geological period.

14. The rock formations of the area are as follows;—

Recent	Soil and alluvium
Tertiary	Cuddalore sandstones
Cretaceaus	Ariyalur stage.
Archaean	Basic dykes. Pegmatite and quartz veins Granite-gneisses, Charnockitic rocks, Garnet-plageiclase rock (anorthosite) Tremolite-talc-rock (altered ultra-basi rock), Chlorite-epidote rock (altered basic rock), Magnetite-quartzites, Hornblende-granulite and Amphibolite.

15. *Archaean System.*—The hornblende granulite is fine to medium grained, compact with a granulitic texture. Where coarse crystals of the amphibole are developed, the rock almost grades into an amphibolite. Magnetite quartzites constitute the ridges in the more or less flat granitic country. Near Santrapuram and towards the Ponnaiyar river a pinknish dark grey to black colouredrock made up of garnet and plagioclase is noticed interbanded with granite gneisses. The rock is coarse-grained, tough and occurs as lenses in granite-gneisses. Charnockitic rocks are developed in force on the south western and western portions of the area. The rocks are dark bluish grey to dark grey coloured, medium to coarse grained and are mostly of an acid type. They vary to a biotite-rich dark greyish type frequently associated with hornblende granulites. Granite gneisses which form the most common type of rock underlie a great part of the area. The gneiss is a greyishmedium grained banded rock carrying biotite as the chief ferro-magnesian mineral and shows considerable variation in mineral composition and texture. Veins of pegmatite and quartz commonly traverse the charnockitic rocks and the granite gneisses of the area. The pegmatite veins which are generally thin, are made up of quartz and pink-felspar with sope amount of ilmenite. The Charnockitic rocks and the granite-gneisses are traversed by basic dykes of dolerite, some extending in a general direction north-north-east to north-east direction and others in a north-east direction some are roughtly paralled to, and others are at right angles to the regional foliation of the formations. The dykes are generally medium grained, compact and black in colour. They are upto a maximum of about 45 metre in width.

16. *Creiaceous System.*—The Ariyalur stage of this system comprises of calcareous conglomerates, arenaceous limestones, limestone and soft calcareous clay and sands. The limestone beds are often highly fossiliferous, lamellibranch and gastropod groups being well represented. Some of the fossils have been given names conncted with the locality such as *Ficulopsis pondicherrensis*, *Trochus arcotensis* and *Pecten verdachellneis*. A piece of country 2 kilometre by 8 kilometre round about Parur, 10 kilometre north of Vriddhachalam contains these in an exposed condition.

17. *Teritiary System.*—The Cuddalore sandstones are found in the south-east and central portions of the district. It consists of grits and sandstones, beds of clay and lignite. The whole formation is characterised by its ferruginous nature and is tinted all hues of yellow, red, brown and purple.

18. *Recent.*—The most recent formation of the district are the alluvial deposits in the deltas of the rivers, Vellar, Gadilam, Ponnaiyur and Gingee. The Vellar delta streched from near Cuddalore to the mouth of the Coleroon on the southern border of the district and runs inland as far as Tittagudi.

19. The granite gneisses, crystalline schists and the tertiary sandstones have given rise to 'red soils'. The colour of the soil is due more to the wide diffusion rather than to a high proportion of the iron content. They are generally poor in nitrogen, phosphorus and humus.

ECONOMIC MINERALS.

20. *Iron ores.*—The banded magnetite quartzites carry fair mount of magnetic iron ore which has been smelted at some localities in the past. Poor grade iron ore occurs at Seshasamudram, Nedumanur, Poykhunnam, Sankarapuram, Manmalai and Budamangalam. The reserves of iron ores in these deposits may add upto a minimum of about half a million tonnes.

21. *Copper Ores.*—Copper lead zinc mineralisation is recorded at Odiyandal, Toluvantangal-Pakkam and Mamandur.

22. *Allanite.*—Allanite occurrences are found as thin disseminations and rarely as nests in pegmatites at Attiyur, Chitterippattu and Porasampathu.

23. *Clay.*—Clay associated with Cuddalore sandstone formations of tertiary age are exposed in revines which dissect the country. The clays occur at depths of 10 metre below a capping of red clays, grits and sandstones. The maximum thickness of the claybed is about 3 metre as at Panikkuppam and Tiruvendipuram. The following are the important localities: Panikkuppam, Maligampatte, Malamambatte, Vandarayankuppam, Terumoukuli, Manaveli, Putturai, Adasal, etc. The clays are usually whitish to cream coloured. They may be utilised in the manufacture of porcelain, white ware, refrectory ware, sanitary ware, etc.

24. *Sodium Salt.*—Sodium salts occur on the surface near Tiruvamur, Asanur and Kachirapalaiyam; but these are not of much importance.

25. *Lignite.*—Lignite deposits of Neyveli covers an area of about 259 square kilo metres. The lignite occurs mostly in a single seam under an over-burden of 49 to 76 metres, the thickness of the seam varying from 0 to 27 metres. The estimated reserves are of the order of 2032 million tonnes. The lignite has a fixed carbon from 30 to 38 percent, volatile matter 40 to 53 percent and calorific value of 9,100 to 9900 B.T.U.

26. *Soils.*—The soils are mainly of the following type :—

1. Red soil.
2. Lateritic soils
3. Black soils
4. Sandy soils and
5. Kallar soils

27. *Red soils.*—The red soils are the commonest in this division. They are derived from the granite gneisses and crystalline schists. The red colour is more due to the wide diffusion rather than to a high proportion of the iron content. The pH varies from 6.5 to 8.0. They are generally poor in nitrogen, phosphorous and humus. They are often thin, gravelly and light coloured but may be rich, deep and dark coloured in the low lying areas. The soils have low value of pore space and co-efficient of volume expansion and higher values of apparent density. The permeability is high resulting in good drainage and can be worked with implements within a wide range of moisture contents. Kankar is also found in some localities.

28. The red soil occurs in all the forests in Kallakurichi range and in portions of Tottapadi and Kattumailur Revenue Firkas and the rest of the forests of Ulundurpet range. The soil is shallow with about 30 centi metre of average depth. There are often outcrops of rocks in elevated areas but the depth may extend upto even 2 metre in low lying areas.

29. *Lateritic soils.*—The lateritic soils are of the low level type, dark red in colour, fine and rich and are strongly weathered. They are formed out of the Cuddalore sandstones. The brick-like red colour is caused by the richness of iron. The pH ranges from 5.4 to 6.7. The soils contain very little of silicate minerals but are mostly dominated by hydrous oxides of iron and aluminium in the clay complex with low silicate/sesquioxide ratio lying in the neighbourhood of 1.33. These characteristics are chiefly responsible for their low cation exchange capacity, cohesion, shrinkage, expansion, etc. They have extremely high power to fix large quantities of added phosphates in an unavailable form and consequently even if the total quantity of phosphoric acid is more, its availability is much less. The lateritic soils are very poor in almost all plant nutrients viz, nitrogen, potash, calcium, avaliable phosphrous, organic matter and soluable salts.

30. Lateritic soils are met with in all the cashew areas, viz., Kangiruppu Bits I and II, Semakottai and Extension, Narimanam, Velangulam, Ammeri, Kallamedu and Kuttadi Reserved Forests. The soil is very deep with low water table. Often conglomerates are met with in these soils. They become loose when wet but harden considerably on drying making it impossible to work with implements. White clay is found underneath these soils at different depths.

31. *Black soil.*—The black cotton soils are formed from a variety of rocks and develop either from the decomposition of the parent rock *insitu* or from the alluvial deposits derived largely from the weathered rock. These are highly argillaceous heavy soils with low degree of horizonation, black in colour neutral to alkaline in reaction the pH ranging from 7.2 to 9.0. The clay content constitutes from 40 to 60 percent of the soil. It is often mixed with calcium carbonate often in the form of kankar nodules which tend to increase with the depth. Kankar often forms hard compact pans obstructing drainage. These soils are highly adhesive, plastic, sticky when wetted, and become hard and cloddy on drying. They have high water holding capacity but this is however, counterbalanced by high hygroscopic and wilting coefficients with consequent low moisture availability.

32. The black cotton soil is more fertile than the red soils. It contains a considerable quantity of lime, magnesia, potash, iron and alumina, but is poor in nitrogen, organic matter and phosphoric acid.

33. The black cotton soil is found in parts of Tottapadi, Kattumailur and Nangur Reserved Forests and part of Kattayanallur unreserved land. This soil is liable to be easily eroded.

34. *Skeletal soils.*—The skeletal soils are found in areas subject to erosion where the whole of the fertile top soil is washed away leaving behind the unproductive sub-soil which represents a superficial thin murramy layer over the underlying rock. The residual skeletal soils are practically devoil of true soil and are covered with dry loose stones and gravels which creat highly unfavourable environments for plant growth.

35. These skeletal soils are found inside the forests of red soil area adjoining water courses and other areas subject to erosion.

36. These soils are usually barren.

37. *Alluvial soils.*—These soils are very deep without any stratification as a result of constant deposition by the rivers. Being the most fertile regions, there are no forests in this area except the mangroves near the sea and some plantations on the river accretion and on the sea-coasts.

38. The alluvium may be sandy with very little of clay and practically no humus as in the Malattar bed where casuarina has been planted, and also on the sea-coast. Or it may be having a small percentage of clay and some humus as in some of the old casuarina plantation at Portonovo and Ariyakoshti. The soil in the mangroves has a high percentage of dark coloured clay with plently of organic matter.

39. *Kallar soils.*—Kallar soils are characterised by the presence of soil efflorescence and contain mainly carbonates, sulphates and chlorides of sodium with any of them as chief salt.

40. Kallar soils occur in patches in most of the forests in Kallakurichi and Ulundurpet ranges and also in Kille and Pichavaram Reserved Forests and are not found in the lateritic areas where cashew is being grown.

41. The plants that incidate the Kallar soils are *Salvadora persica, Capparis decidua, Clerodendron inerme, Cassia auriculata, Cressa cretica, Sporobolus tremulus*, etc. These are soils which are not conducive to the growth of valuable species.

SECTION 4—CLIMATE AND RAINFALL.

42. *Climate.*—The climate according to Bagnouls and Gaussen (*) belongs to the class 3—xerotheric tropical bioclimate. Legris and Viart (†) have sub-divided this type into several and accordingly the climate is called 36th Medium tropical transitional bioclimate. This is characterised by the monthly temperature always above 20°C, a total rainfall warrying from 500 to 1,500 millimetre with a dry period of 5 to 6 months.

43. The land adjoining the sea is moist and damp without the extremes of heat and cold. The interior areas are comparatively dry and show slight extremes of heat and cold. The top of the Kalrayans is always cooler than the rest of the parts of this division due to the higher altitude. While Cuddalore represents the coastal climate, Kallakurichi stands for the typical inland climate. The meteorological data for Cuddalore are given in Appendix I.

44. *Rainfall.* The annual normal rainfall for South Arcot is 1194 millimetre with 54.4 rainy days. The annual rainfall varies considerably from place to place and from year to year. It is as low as 148.57 milli metre recorded at Cuddalore in 1958 and as high as 2068.70 millimetre recorded at Portonove in 1960. The number of rainy days may vary from 12 at Cuddalore in 1958 to as much as 111 at Chidambaram in 1956.

45. The bulk of the rainfall occurs usually during the north-east monsoon. However, the south-west monsoon also brings in some rains mainly to the western portions of the division. The rainfall on the coastal areas is comparatively heavier than that of the inland.

46. The period from February to April is usually dry, though occasional showers may occur. From May onwards rains occur intermittently upto July, increase slightly during August-September become heavy during October-November when the north-east monsoon sets in and taper off in December-January.

47. The rainfall in this division is highly capricious and therefore undependable. A long dry spell of even six months may occur in places during certain years.

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* Bagnouls, F and Gaussen H (1957): Les climates biologiques etleur classification, Annales de Geographic p. 193-220.

† Legris P. and Viart M. (1961) *Dioclimates of South India and Ceylon,* Imprimerie Sri Aurobindo Ashram, Pondicherry.

48. The following Table gives the mean monthly rainfall for the period from 1901 to 1950;—

STATEMENT SHOWING THE MONTHLY ANNUAL NORMALS OF RAINFALL IN MM. AND NUMBER OF AVERAGE RAINY DAYS BASED ON RECORDS FOR THE PERIOD 1091–1950.

CUDDALORE SOUTH DIVISION.

Serial number and Name of the station (1)	*Geo-co-ordinates. LAT.* (2)	*LOG.* (3)	*Number of years.* (4)	*January* (5)	*February* (6)	*March* (7)	*April* (8)	*May* (9)
South Aroct district	Normal out of stations		17	53·7 2.2	46·6 1.8	15·3 0·7	29·3 1·3	56·4 2·6
1 Panruti	11·46	79·34	50	58.4 2.0	15.0 0·9	16.0 0.8	29·5 1·2	44·7 2.1
2 Cuddalore	11·46	79·46	50	66·3 2.8	22·9 1.9	19.1 0·8	23·9 1·4	49·3 1.7
3 Kurinjipadi	11·34	79·36	48	78·1 2·2	15·2 0.9	17·3 9·7	24·9 1,2	45·5 2·3
4 Portonove	11·30	79.45	50	67.1 3.0	19.1 1·1	15·7 0·7	31·3 1·2	42·9 1·7
5 Chldambaram ...	11·24	79·45	50	74·4 3·1	18·3 1·1	17·3 0·7	31·0 1·3	40.5 2.0
6 ∩ridhachalam ..	11·30	79·20	50	48·8 2.2	14·2 0·8	10·9 0·7	29.0 1·5	61.4 3·2
7 Kallakurichy ..	11·44	79·56	50	47·2 2·0	14·0 7·8	14.0 7·8	38·6 1·9	85·5 4·2
8 Ulundurpet ..	19·42	79.17	50	46·2 1·9	14.2 0.9	9·9 0·6	31·7 1·6	66·8 3·2
9 Tirukoliur	11.51	79·13	50	33.5 1.7	10·4 0·6	11.2 0·7	14·1 1.3	64·0 3·6

Serial uumber and name of the itation	*June.* (10)	*July.* (11)	*Augst.* (12)	*September.* (13)	*October.* (14)	*November.* (15)	*December.* (16)	*Annual* (17)
South Aroct district.	41·9 3·1	73·6 5·0	132.5 7.5	141·8 7·0	215.9 9.3	277·3 9·8	134·6 5·1	1,193· 54·4
1 Panruti	45·2 3·2	83.7 5·7	148·8 7·5	142.5 6·7	220.5 8.7	270·1 9·3	140.2 4·8	1,224·5 52·9
2 Cuddalore	34·0 2·6	66·3 5·9	114·1 7·2	126.0 6.1	226·0 10·4	384.1 11·3	178·6 6·2	1,310·6 56·4
3 Kurvnjipadi.. ..	43·4 3·8	70·1 4·6	127·8 7·2	138.9 6·7	212·1 9·2	311·9 9.5	158·5 4·8	1,243·7 53·1
4 Portonove	37.2 3·0	65,3 4·5	124·7 6·9	126·2 6·7	266.0 9·9	410.7 7·8	215.1 6·8	1,441.9 57·3
5 Chiaambaram ..	44·2 3·1	73·3 4·7	127·0 7.3	129·0 6;3	270·0 7.5	395.0 11.6	209·5 7·1	1,429·2 57·8
6 Vridhachalam ..	50·0 3 3	71·4 5·1	134.4 8.1	142·5 7·3	193.5 9·1	174·7 9·2	75·4 4·6	1,000·3 55·1
7 Kallrkurich ..	45·7 2·9	71·5 5·3	136·1 8·0	172·0 7·9	193·5 9.1	174·7 8·4	75·4 4·3	1,040.2 55·7
8 Ulundurpet ..	47·0 3·2	74·9 5·3	121.9 7·3	139·2 7.0	186.4 8.7	207·8 8·6	98·5 4.3	1,044·5 52·1
9 Tirukoilur ..	49·0 3·8	86·9 5 5	136·9 7.4	153.2 7·4	192·5 8.8	176.6 8.3	77·0 3·8	1,022·3 52.9

NOTE.—The figures below the rainfall denots the number of rainy days for the month.

SECTION 5—WATER SUPPLY.

50. There are no important sources of water supply within the reserved forests. Adjoining and within the forests there are several tanks which have the near by forests as their catchment areas. These rainfed areas contain water for only six months in a year, i.e., from July to December. The tanks are used to some extent to irrigate the paddy fields also. These tanks and some of the wells built during the panchayat management are the chief sources of drinking water to the cattle. However, water is available at a depth of about 5 metre and the water table goes deeper to 7 metre or more during summer.

51. The cashew areas of Kangiruppu are usually the worst regarding water supply, the whole area being at a relatively higher level with very low water table. Water is available only below a depth of about 25 metre.

52. A list of wells in the division is given in Section 3 of Chapter V.

SECTION 6—DISTRIBUTION AND AREA.

53. The Cuddalore south division covers an area of 6067 square kilometres (2,342 square miles) containing 296 square kilometre (11.4.5 square miles) of forests. It consists 25 reserved forests one reserved land and 8 nureserved land. In addition, there are 3 private forests extending over an area of roughly 10 square kilometres. There are four territorial ranges, one plantation range mainly for Eucalyptus and one farm forestry range.

54. The various ranges and the forests contained in each range are given below:—

Name of the forest.	*Area in hectares.*	*Area in acres.*	*Classification.*
(1)	(2)	(3)	(4)
Panruti Range.			
1 Kangiruppu Bit I	1,196·25	2·956	R.F.
2 Kangiruppu Bit II	1,043·68	2,579	,,
3 Killai	258·19	638	,,
4 Pichavaram	1,007·26	2,489	,,
5 Pichavaram Extension	92·27	228	
6 Ariyakoshti	33·18	82	U.R.L.
7 Portonovo	17·00	42	,,
8 Tiruthuraiyur	32·37	80	
Total	3,680·20	9,094	
Vridhachalam Range.			
1 Ammeri	349·24	863	R.F
2 Narimanam	375·55	928	,,
3 Semakottai	2,458·46	6,075	,,
4 Somakottai extension	73·65	182	,,
5 Velangulam	277·46	685·62	,,
6 Kattayanallur	178·06	440	U.R.L.
Total	3,712·42	9,173·62	

Ulundurpet Range.

1	Alwarmalai	3,559·20	8,795	R.F.
2	Kallamedu	416·83	1,030	,,
3	Kattumailur	522·04	1,290	,,
4	Kattumailur Extension	196·27	485	,,
5	Kottalamalai	1,138·78	2,814	,,
6	Krishnapuram	2,445·91	604·4	,,
7	Kuttadi	687·96	1,700	,,
8	Magarur	511·12	1,263	,,
9	Nangur	685·54	1,694	,,
10	Porasakurichi	333·06	823	,,
11	Thottapadi	585·98	1,448	,,
12	Varanjaram	353·69	874	,,
13	Alwarmalai Addition I Block	6·41	15·85	R.L.
14	Kuthakudi	524·07	1,295	U.R.L.
15	Iruvelpet	16·09	40	,,
16	Pandur	384·86	951	,,
17	Sirupakkam	437·06	1,080	,,
	Total	12,804·97	31,641·85	

Kallakurichi Range.

1	Kanai	696·38	1,720·80	U.R.L.
2	Parigam	520·51	1,286·20	,,
3	Puttai	412·37	1,019·00	,,
4	Rangappanur	936·46	2,316·06	,,
5	Tagarai	4,452·18	11,001·60	,,
6	Mallapuram	407·92	1,008·00	,,
7	Melpalangur	1,319·27	3,260·00	,,
8	Poosapadi	654·38	1,617·00	,,
	Total	9,399·47	23,226·66	

In addition, the three private forests of Jadayagoundan, Kurumbagoundan and Ariyagoundan Jaghirs are also situated within Kallakurichi Range limits.

55. The following are the areas of each kind of forest under the various ranges:—

SECTION 6—DISTRIBUTION AND AREA.

Serial number and name of the Range.	*Class III Forests.*	*Reserved land.*	*Unreserved land.*	*Total area in each Range.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
1 Panruti Range	3,597·65 hectares. (8,890·00 acres)	Nil. (Nil.)	82·55 hectares. (204·00 acres.)	3,680·20 hectares. (9,094·00 acres.)	..
2 Vriddachalam Range	3,534·36 hectares. (8,733·62 acres.)	Nil. (Nil.)	178·06 hectares. (440·00 acres.)	3,712·42 hectares. (9,173·62 acres.)	
3 Ulundurpet Range	11,436·38 hectares. (28,260·00 acres.)	6·41 hectares. (15·85 acres.)	1,362·18 hectares. (3,366·00 acres.)	12,804·97 hectares. (31,641·85 acres.)	
4 Kallakurichi Range	9,399·47 hectares. (23,826·66 acres.)	Nil. (Nil.)	Nil. (Nil.)	9,399·47 hectares. (23,226·66 acres.)	
Total in hectares	27,967·86 hectares.	6·41 hectares.	1,622·79 hectares.	29,597·06 hectares.	
Total in acres	(69,110·28 acres.)	(15·85 acres.)	(4,010·00 acres.)	(73,136·13 acres.)	
In square Kilometres	279·68	0·06	16·23	295·97	
In square miles	107·96	0·025	(6·26)	(114·49)	

56. A list of reserved forests, the dates of their reservation, dates of taking over by the department, etc., are given in Appendix III.

SECTION 7—STATE OF BOUNDARIES.

57. The reserved forests have been permanently demarcated by means of granite stone slab cairns and cleared lines of 1.83 metres to 3.36 metres (6′ to 12′) width between the cairns. The unreserved lands which were once reserved forests but were disreserved for the use of Neyveli Lignite Corporation and later taken back by the Forest Department have the cairns. The other unreserved lands and reserved land have no demarcation on the ground except for the fences on the boundary. Now most of the cairns are not having the correct serial numbers given in the original maps. Some of the cairns are missing or broken and the boundary lines are not cleared in many places. Parts of Velangulam Reserved Forests and Ammeri Reserved Forest were handed over to the Neyveli Lignite Corporation but the boundary has not yet been demarcated by cairns.

58. A list of defects noticed on the boundaries is given in Appendix V.

SECTION 8—LEGAL POSITION.

59. All the reserved forests are the absolute property of the State subject to certain rights and concessions and have been declared under section 16 of the Madras Forest Act V of 1882. The unreserved lands belong to the Revenue Department but are managed by the Forest Department.

60. The unreserved lands of Koothakudi, Pandur and Sirupakkam were recently taken over by the department from the Neyveli Lignite Corporation. They were once reserved forests but were disreserved and handed over to the Neyveli Lignite Corporation for rehabilitation purposes. Their boundaries and cairns are in tact.

SECTION 9—RIGHTS AND CONCESSIONS.

61. The rights of way and other concessions, if any, admitted at the time of settlement have been recorded in section 16 notification of the Madras Forest Act V of 1882 in regard to each reserved forest and published in the *Fort St. George Gazette*.

CHAPTER II—THE FOREST.

SECTION 1—COMPOSITION AND CONDITION OF THE CROP.

62. *General.*—The Cuddalore South Forest Division consists mainly ex-panchayat forests which, owing to improper management during the panchayat regime, contain now vegetation of severe retrogression types. The hot climate with a low rainfall has limited the vegetation to a dry type with small trees and thorny shrubs.

63. This division is situated in the south eastern corner of the floristic region " Decan " described by Gamble in his flora of the Presidency of Madras and also forms part of the region referred to as " Carnatic " in the same flora. The coastal belt is called the " Coromandal coast " in some of the old floras.

64. *Forest types.*—The forests of this division can be divided into four regions from the points of view of topography, soil conditions and flora. They are—

(1) the coastal regions containing the casuarina plantations, sand dunes, the mangroves and the scrub jungle. The whole of Pichavaram, Pichavaram Extension and Kille Reserved Forests and the Porto Novo and Ariyakoshti U.R.L.

(2) the lateritic region—containing the extensive cashew plantation and the dry evergreen forest—Kangiruppmu Bit I and II, Velangulam, Ammeri, Narimanam, Semakottai and Extension, Kallamedu and Kuttady Reserved Forests.

(3) the inland plains region—containing the eucalyptus and miscellaneous fuel plantations and the thorny scrub jungles—Alwarmalai Varanjaram, Porasakurichi, Magarur, Kattumaliur, Nangur, Krishnapuram, Thottapadi, Kottalamalai, Melpalangur. Mallapuram and Poosapadi Reserved Forests and Pandur, Sirupakkam, Kattayanallur, Kuttakudi U.R.L.

(4) the Kalrayan region—containing sandal and dry deciduous forests—Tagarai, Parigam, Kanai, Puttai and Rangappanur Reserved Forests.

65. Each ergion is described below with reference to the forest types and the floristics. The forest types given are according to the "Revised Survey of the Forest types of India" by Champion, H.G. and Seth, S.K.

66. The following forest types are found in this division:—

I. Moist Tropical Forests—

Group 4-A—Littoral forests—

Sub-group 4-A—Littoral forests—

(1) L1—Littoral forest—

Sub-group 4-B—Tidal swamp forest—

(2) TS1—Mangrove scrub.

(3) TS2—Mangrove forest.

II. Dry Tropical Forests—

Group 5—Tropical dry deciduous forests—

Sub-group 5-A—Southern tropical dry deciduous forests—

(4) C3—Southern dry mixed deciduous forest.

Degradation Stage—

(5) DS1—Dry deciduous scrub.

Group 6—Tropical thorn forests—

Sub-group 6-A—Southern tropical thorn forests—

(6) C1 Southern thorn forest.

(7) DS1—Southern thorn scrub.

(8) 6DS2—Southern Euphorbia scrub.

Group 7—Tropical dry evergreen forests—

(9) DS1—Tropical dry evergreen scrub.

67. Under each forest type the floristics are described under different storeys such as :—

I Top storey
II Second storey
II (*a*) Bamboos
III Shrubs
IV Ground flora
IV (*a*) Herbs
IV (*b*) Grasses
V Climbers

68. (1) *Coastal region.*—This region contains (*a*) sandy areas with sand dunes, (*b*) tidal swamps and (*c*) scrub jungles.

69. (*a*) The sandy areas contain 4-A/L1 Littoral Forest rather poorly represented.—

Floristics.

I/II *Calophyllum inophyllum, Syzygium cumini, Cassia fistula, Barringtonia acutangula, Premna latifolia.*

III. *Clerodendron imerme, Cassia auriculata Pandanus tectorius, Vitex negundo, Jatropha gossypifolia, Opuntia dillenii.*

IV. (*a*) *Ipomoea pes-caprae, Sesuvium portulacastrum, Cyperus arenarius.*
(*b*) *Eragrostris tremula, Spinifex littoreus.*

V *Abrus precatorius, Cissus quadrangularis, Cissampelos pariera.*

70. Much of these areas have been reclaimed into casuarina plantations.

The Tidal Swamps.

71. The forest types 4B/TSI Mangrove scrub and 4B/TS2 Mangrove forest occur in the tidal swamps.

72. 4A/TS2 Mangrove forest.—This is typically a closed evergreen forest of moderate height (up to 10 metre) composed of trees specially adapted to survive on tidal mud which is permanently wet with salt-water and sub-merged at every tide. Stilt roots are very typical notably in Rhizophora so also leathery and entire leaves and vivipary.

73. The type is found all along the fringes of lagoons and islands—

Floristics.

I/II. *Rhizophora mucronata, R. candelaria, Sonneratia apetala, Avicennia officinalis, Bruguiera cylindrica, Excoecaria agallocha.*

III. *Aegiceras corniculatum, Acanthus ilicifolius, Lumnitzera racemosa, Ceriops roxburghiana.*

V. *Dolbergia spinosa, Derris trifoliata.*

74. 4B/TS1 *Mangrove scrub.*—This is more or less a low dense forest (rarely 5 metre tall) often reduced by biotic agencies. The species are few and markedly gregarious all evergreen with entire leathery leaves.

This type is found a little farther away from the previous type towards the interior parts of islands. It is far more extensive than the mangrove forest and is subject to inundation with salt water.

Floristics.

I/II. *Avicennia marina, Avicennia offcinalis, Excoecaria agallocha, Lumnitzera racemiosa, Bruguiera cylindrica.*

III. *Ceriopsis roxburghiana, Acanthus ilicifolius.*

IV. (a) *Suaeda maritima, Suaeda monoica, Suaeda, nudiflora, Sesavium portulacastrum.*

(b) *Fimbristylis polytrichoides.*

75. There are large areas containing no tree species but occupied by the halophytic plants like the species of *Suaeda, Sesuvium, Arthrocnemum* and *Salicornia.* Young regeneration of *Avicennia marina* is usually found in these areas.

76. The mangroves are remarkably adapted to the peculiar edaphic factors of the locality. Stilt roots, characteristic of the species of *Rhizophora,* are also seen in *Bruguiera Acanthus, Dalbergia* and *Derris.* The species of *Avicennia* and *Sonneratia* possess negatively geotropic roots called the pneumatophores which grow above the soil and water level. Though these pneumatophores have so far been considered as only organs of respiration, recent works indicate that the most important function of these roots is to ensure a constant supply of absorbing roots just below the soil level which tends to rise due to silting in addition to providing a means of gaseous exchange. The leaves are thick and leathery with thick cuticle, water storage tissues deep seated chlorenchyma and salt secreting glands. The number of stomata per unit area is unusually high in most of the mangroves. The fruits are dispersed by water as they are able to float for a number of days without deterioration and vivipary is a common feature of the majority of the species.

77. There had been diverse opinions regarding the ecological status of mangroves. Stamp and Burtt Davy considered mangroves as climatic climax whereas, Tansley and Chipp preferred to assign the status of edaphic climax. Champion placed the tidal forests under primary seral Types of the Moist Tropical seral formations.

Scrub Jungles.

78. Inside the mangrove area on the elevated land above the inundation zone, occurs a kind of scrub jungle which is a combination of both 7/D SI—Tropical dry evergreen scrub and 6A/DS1 Southern thorn scrub. This is a more or less open low forest with dense bushes, climbers and occasional trees.

Floristics.

I/II. *Dichrostachys cinerea, Crataeva religiosa, Salvodora persica, Manilkara littoralis, Morinda tinctoria, Pongamia pinnata.*

III. *Azima tetracantha, Cassia auriculata, Clerodendron inerme, Crotalar is laburnifolia, Gmelina asiatica, Jatropha glandulifera, Opuntia dillenii, Memecylon Umbellatum, Gymnosporia spp, Securinega virosa,*

IV. (a)*Geniosporum prostratum, Borreria hispida.*

V. *Cissus quadrangularis, Asparagus racemosus, Tinospora cordifolia, Cocculus hirsutus.*

THE LATERITIIC REGION.

79. This region covers the entire lateritic high ground called the Mount Capper Plateau and be neighbourhood. The soil is very deep, well drained and the water table is very low. The forest type common to this region is a peculiar dry evergreen vegetation corresponding to 7/DS1.—Tropical dry evergreen scrub of Champion and Seth. This is the result of degradation of the type 7/C1—Tropical dry evergreen forest.

Eloristics

I/II. *Albizzia amara, Chloroxylon swietenia Cassia fistula, Morinda tincotria. Maba buxifolia.*

III. *Memecylon umbellatum; Chmelia asiatica. Cassia auriculata, Ixora arborea, Plectronia parviflora, Randia* spp., *Gymnosporia* spp., *Securinega* spp., *Doaonaea viscosa Carissa spinarum, Glyrosmis cochinchinensis.*

IV. (*a*) *Merremia tridentata, Evolvulus alsinoides, Zornia zeylonensis, Asystasia gangetica, Pavonia zeylancia, Oldenlandia umbellata, Cassia kelinii, Blepharis boerhaaviaefolia.*

IV. (*b*) *Aristida* spp.

V. *Hemidesmus indica, Jasminum angustifolium Abrus precatorius, Acacia pennata, Pterolobium indicum, Dioscorea sp. Cissus quadrangularis.*

80. Most of these areas have been converted into cashew plantations but the vegetation occurs in a diminutive form in the unplanted areas and uncleared portions in between cashew.

INLAND PLAINS.

81. The bulk of the forests are situated in this tract. The soil is shallow varying from 0.3 metre to 1.0 metre in depth, often eroded. Most of the forests contain light red soil but a few contain black cotton soil also.

82. The vegetation corresponds to the following forest types :—

(i) 6 *A/C* 1 *Southern thorn forest*

83. This occurs in Varanjaram Reserved forest and parts of Alwarmalai and Krishnapuram Reserved forests. The forest is more or less open the overwood consisting of medium sized trees. In favourable localities the canopy is close.

Floristics

I. *Albizzia lebbeck, Albizzia amara, Acacia leucophloea, Zizyphys mauratiina. Acacia chundra, Acacia ferruginea, Azadirachta indica, Lannea coromandelica.*

II. *Atalantia monophylla, Zizyphus xylopyrus. Cleistanthus collinus, Canthium dicoccum, Dichrostachys cinerea, Cymnosporia* sp.

III. *Carissa carandus, Carrisa spinarum, Rhus mysorensis, Dodonaea viscosa, Securinega* spp.

IV. (*b*) *Aristida* spp., *Heteropogon contortus.*

V. *Acacia pennata, Pterolobium indicum, Toddalia Asiatica, species of Vitceae, Rivea* sp.

(ii) 6*A*/*C*2/*DS* 1 *Southern thorn scrub*

84. This is a degraded stage of the thorn forest due to maltreatment resulting in the formation of close almost impenetrable thorny thickets 4-6 metres high, not much different from the undergrowth characteristic of the prevailing climax type in which the few suviving threes stand out here and there. Spiny climbers are common. Further degradation may result in sparse thickets, 2-4 metre high in which grasses are more abundant. The floristic composition remains essentially unaltered.

Floristics

I/II. *Albizzia amara, Azadirachta indica, Maba buxifolia, lannea coromandelica, Acacia leucophloea, Acacia sundra, Zizyphus xylopyrus, Dichrostachys cinerea.*

III. *Capparis sp. Securinega leucopyrus, Randia dumetorum, Canthium dieoccum, Flacourtia indica, Rhus mysoransis, Claussena wildenovii, Carissa spinarum, Chomelia sasiatica, Euphorbia antiquorum.*

IV. *Pterolobium indicum, Acacia pennata, Hemidesmus indica.*

(iii) *6A/C2/DS2 Southern Epukorbia scrub*

This occurs often side by side with the previous type—Southern thorn scrub. It is a very open formation in which fleshy *Euphorbias* are the most important constituent. The thorny Acacias and their associates also occur but are more than usually stunted and form widely spaced low rounded bushes. Much of the soil is usually bare but there is usually a thin cover of grasses.

Floristics

I. *Euphorbia antiquorum Capparis* spp.

II. *Cassia, auriculata, Barleria buxifolia, Opuntia dillenii, Dodonaea viscosa,* ***Sarcostemma brevistigma.***

IV.(b) *Aristida* spp, *Heteropogon contortus.*

V. *Cissus quadrangularis, Rivea* sp. *Ceropegia juncea Hemidesmus indica.*

THE KALRAYAN REGION.

86. The bulk of the vegetation in this region is situated on the eastern slopes of Kalrayans. In favourable localities not subject to depredations, the vegetation corresponds to type 5B/C3—Southern Dry Mixed deciduous Forest ofChampion and Seth. Most of the forests carry a degraded vegetation corresponding to type 5/DSI—Dry Deciduous Scrub but this type contains species which belong to the 6A/CI—Southern thorn forest and 7/CI—Tropical Dry Evergreen Forest also.

87. *Type 5-/C3—Southern Dry Mixed deciduous forest.*

Floristics

I/II. *Albizzia amara, Albizzia odoratissima Anogeissus latifolia, Terminalia tomentosa, Cassia fistula, Lannea coromandelica, Cochlospermum religiosum, Dolichandrone falcata, Givotia rottleriformis, Gyrocarpus jacquini, Moringa concanensis Commiphora caudata, Cordia* sp., *Buchanania lanzan, Santalum album.*

II. (*a*) *Dendrocalamus strictus—Very stray.*

III. *Vitex negundo, Gardenia* spp., *Rhus mysorensis, Grewia spp. Acalypha fruticosa, Murraya koenigii, Chomelia asiatica.*

IV. (*a*) *Hibiscus micrathus, Oscimum* sp. *Sida acuta, Evolvulus alsinoides, Sida cordifolia, Boerhaavia diffusa.*

IV. (*b*) *Aristida* sp. *Cymbopogon* sp.

V. *Pterolobium indicum. Acacia vennata. Ventilaao madraspatana. Zizyphus oenoplia, Olax scandens.*

88. *Type 5/DSI—Dry deciduous scrub.—*

I. *Albizzia lebback, Albizzia amara, Albizzia oboratissima, Acacia sundra. Acacia leucophloea, Strychnos nuxvomica Gyrocarpus jacquini,* Ficus spp. *Alalantia racemosa, Lannea coromandelica, Feronia elephantum.*

II. *Chloroxylon swietenia, Canthium* spp., *Capparis stylosa, Zizyphus rulocarpus, Santalum album, Alangium lamarckii, Dichrostachys cinerea, Wrightia tinctoria Premna tomentosa, Cordic* sp. *Buchanania lanzan, Gardenia spp., Maba buxifolia Vitex* sp., *Diospyros melanoxylon, Atalantia monophylla.*

III. *Rhus mysorensis, Memecylon edule, Cadaba indica, Scutia, myrtina Chomelia asiatica, Capparis* spp., *Carissa* spp., *Acalypha fruticosa, Strobilanthus* sp. *Murraya koenigii, Gmelina asiatica, Barleria aristata, Ehretia microphylla, Securinega* spp. *Euhorbia antiquorum, Grewia* spp., *Barleria longiflora, Crossandra undulaefolia Glycosmis cochnchinenses. Claussena willdennoii. Toddalia asiatica.*

IV. (*a*) *Blepharis boorhaaviaefolia, Aerva lanata, Desmodium* spp., *Sida cordfolia*, Sida acuta, Lepidagathis cristata, Asystacia gangetica, Ocimum spp., Hibiscus micranthus, *Sida veronicaefolia, Boerhaavia* spp. fl

IV. (*b*) *Heteropogon contortus, Aristida sp. Aplua aristata.*

V. *Pterolobium indicum, Acacia pennata, Zizyphus oenoplia, Jasminum* spp., *Pergularia extansa, Aspidopterus roxburghiana, Dioscorea pentaphylla, Calycopteris floribunda, Hippocrataea indica, Hugonia mystax, Cocculus villosus, Cissampelos pariera.*

Plantations and their condition.

89. *Cashew.*—There are about 5866 ha of cashew in Cuddalore South division mostly situated in the lateritic tract. Though large scale planting of cashew was begun from 1956 onwards, the plantations are not uniform. While there are several blanks to be filled up in certain places, in some places of the same plantation the crop is congested and so requires thinning. Growth is retarded in some places due to the presence of the intervening jungle growth or due to severe soil erosion—Some of the 1958 and 1959 plantations are better than 1956 plantations.

90. *Casuarina.*— Casuarina grows well in the Ariyakoshti area. The growth is not uniform in Portonovo, Kille and Pichavaram areas. The yield is comparatively poor in this division (vide statistics of yield and growth). The plantations in Malattar bed at Tiruthuraiyur and Iruvelpet are very poor in respect of stocking as well as growth.

91. *Eucalyptus.*—The first plantation of *Eucalyptus* hybrid was raised in this division in 1959 over an area of 4.05 ha in Alwarmalai Addition Block. The pilot planting in Pandur U.R.L. during 1962 has shown that *Eucalyptus* has a good future in this division. When *Eucalyptus* is grown under proper cultural conditions like good soil working and weeding it makes an excellent crop. The potentialities of *Eucalyptus* plantations are great because of the possibilities of utilising the wood not only for burning as firewood but also as industrial wood for rayon and paper pulp manufacture. It is necessary, however, to select suitable area with deep and good soil for *Eucalyptus* as otherwise it fails miserably. In murram and Kallar soils *Eucalyptus* does not grow.

92. *Miscellaneous plantations.*—A large area has been planted with miscellaneous species under fue regeneration and rehabilitation of ex-panchayat forests. Except for a few areas the plantations are generally a failure. The recent plantations raised from 1963 onwards after intensive soil preparations like complete clearfelling and uprooting the jungle growth are promising.

93. *Sandal.*—Sandal occurs in the Kalrayan slopes in parts of Tagarai Revenue forests and in scattered manner in Parigam and Rangappanur Revenue forests. The crop is young consisting of saplings and trees of up to 45 cente meter in girth. There is no spike in this area. Regeneration is not quite adequate.

SECTION 2.—INJURIES TO WHICH THE CROP IS LIABLE.

94. *Climatic.*—The greatest injury to the forest crops in this division is caused by drought which kills off the young plants. Therefore regeneration is an up hill task and success depends entirely upon the intensity and distribution of rainfall and cultural conditions which would ensure retention of moisture in the soil. Death of casuarinma saplings

even beyond the third year is not uncommon in this division. Wind is another factor which bends or breaks the trees. Wind damage is severe in casurina plantations which are situated near the sea shore. Cyclones are common once in a few years in the coastal areas.

95. *Human agency.*—The absence of adequate tree crops in the village is a compelling factor leading to illicit removal of fuel, small timber and manure leaves from the forests. The unfettered rights the villagers enjoyed in these forests during the panchayat regime and the high illiteracy and poor economic condition of the people are all additional factors responsible for illicit removals. The position of forest offences in this division is given in the following statement.

Serial number.	*Nature of offences.*	1959–1960	1960–1961	1961–1962	1962–1963	1963–1964
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Injury by forest fire	2	6	28		
2	Unauthorised felling	800	711	891	1015	1321
3	Unauthorised grazing	142	215	223	162	120
4	Other offences	107	194	58	114	261
	Total No. of offences ..	1051	1126	1200	1291	1702
		RS.	RS.	RS.	RS.	RS.
5	Revenue realised	4,762·20	5,925·99	5,639·00	11,707·00	9,666·50

96. Fire is not common in this division. Fires if any are mostly incendiary or due to the carelessness of men. The following statement gives the incidence of fires in this division.

FIRE OCCURRENCE IN CUDDALORE SOUTH FOREST DIVISION.

Serial number and name of the Reserved Forest.		*Number of fires.*	*Area in hectares.*	*Remarks.*
(1)		(2)	(3)	(4)
1 Tagarai	1954–55	1	0·40	..
2 Pootai	..	1	1·62	..
	1955–56			
	Nil.			
	1956.57			
1 Tagarai	..	1	0·20	..
2 Kanai	..	2	8·90	..
	1957–58			
1 Tagarai	..	1	0·20	..
	1958–59			
1 Thottapadi	..	1	21·40	..
2 Krishnapuram	..	1	1·21	..

Serial number and name of the Reserved Forest. (1)	*Number of fires.* (2)	*Area in hectares.* (3)	*Remarks.* (4)
1959–60			
1 Poosapadi	2	5·66	..
2 Pootai and Rangappanur	1	4·50	..
1960 61			
1 Tagarai .. .. .. —	1	0·40	..
2 Poosapadi	10	4·50	..
3 Mallapuram	4	1·61	
4 Thottapadi .. .. .. —	1	34·40	..
5 Alwarmalai	1	1·10	..
1961–62			
1 Tagarai	5	17·81	..
2 Poospadi	1	80·94	..
3 Kottamalai —	1	3·44	..
4 Thottapadi	1	28·53	..
5 Krishnapuram	1	4·50	..
1962–63			
1 Krishnapuram	1	0·20	..
1963–64			
1 Kottalamalai	1	0·81	..

97. There is unrestricted grazing in all the forests resulting in the absence of natural regenration of valuable species and compacting of the soil leading to erosion. The present degraded state of the forests is mainly due to the evil effects of over-grazing and goat-boowsing in the past. In fact there is very little grass in the forests due to continuous grazing. Unless there is a drastic reduction in the number of cattle which are mostly useless and the villagers co-operate with the department in implementing rotational or deferred grazing methods, the forests are bound to deteriorate further with less and less of fodder.

The number of cattle which grazed the forests as per permits is given below:—

	1959 — 1960	1960 — 1961	1961 1962	1962 1963	1963 1964
Buffaloes .. —	528	614	632	680	609
Cows and bulls	14,789	15,998	15,629	19,851	19,277
Sheep	29,285	29,676	26,258	32,945	38,125

98. *Animals.*—The herbivores such as the porcupines, hares and deer do a lot of havoc to the seedlings and species like Vagai are usually nibbled off repeatedly by these animals. Actually this is one of the important factors which led to the failure of miscellaneous plantatious in the past.

99. *Noxious plants.*—Species of *Dendrophthoe* and *Viscum* are found to occur as semi-parasites on many trees. The mangrove trees especially *Excoecaria agallocha* are badly infested by these parasitic plants. *Cassytha filiformis* is another parasitic plant occurring in all the forests.

100. A number of climbers like *Acacia intsia, Pterolobium indicum, Zizyphus ocuoplia* and *Hemidesmus indica* grow over valuable crops like Cashew and Eucalyptus and choke them completely. The climbers are a menace in these plantations and have to be constantly kept under check by repeated cutting and if necessary using chemicals.

101. *Pests and diseases.*—A list of pests and diseases in Cashew and Casuarina is given in Appendix IX. The diseases and pests affecting Eucalyptus hybrid are not fully known.

102. Spike dsease of sandal is not found in the forests of this division.

CHAPTER III UTILISATION OF THE PRODUCE.

SECTION 1—AGRICULTURAL CUSTOMS, WANTS OF THE POPULATION AND INDUSTRIAL NEEDS.

103. *General description of the population.*—The Cuddalore South division is moderately populated, the Chidambaram taluk being more thicky populated than the rest. Peoples of different religions, castes and origin live in the tract. The only people who live in the forest area are the Malayalis who are the inhabitants of the Kalrayan Hills. The Narikoravas are a wandering tribe who live by snaring animals and birds.

104. The Malayalis (literally hill-men) are the inhabitants of the Kalrayan hills and they are not a ' hill-tribe ' in the ordinary sense of that expression. They are Tamilians who had emigrated to the hills at some remote period. They speak Tamil and worship the ordinary Gods of the plains. They say that they are Vellalars who emigrated to the hills from Kancheepuram bringing with them their God Kari Raman; and at their weddings the presiding priest sings a kind of chant just before the tali is tied which begins with the words ' Kanchi, the (sacred) place, and Kari Raman in front. ' Tradition says that the hills were originally inhabited by the Vedars and that the Malaiyalees killed the men and married the women. At marriages a gun is still fired in the air to symbolize the death of the Vedar husband.

105. The houses of Malayalees are made of bamboo and thatched with grass. They get all their requirements from the plains. Their main occupation is agriculture. Cholam, Kambu, Varag,u Samai, Ragi, Beans and Red Gram are the important crops. Bananas, mango and jack are the tree crops. Pongal is celebrated by them with much ceremony. On the third day i.e. Karinal, they turn out and beat the jungle up with guns and it is inauspicious if nothing is shot. They also take part in a kind of bull-baiting game, in which cattle are enclosed in a specially constructed pen. worried until they become wild and then captured one by one and dragged into a smaller pen alongside.

106. They have many shrines to the lesser Gods on the Kalrayans at which they themselves do the puja. Their deities include Mariamma, Draupadi, and many other similar village Goddesses. In some of their shrines they place the prehistoric cells and other stone implement which are found on the hills. They take oaths before those shrines to settle disputes among them. The famous temple at Chinna Tirupati situated on the south-east corner of the Kalrayans is considered highly sacred.

107. *Occupation.*—Agriculture is the main occupation of the people. Cattle are kept in large numbers mainly for the dung as they are otherwise not of much use. Sheep and goats are also, reared as a subsidiary occupation to supplement the agricultural income Sheep are regularly reared in large number on the south-west corner of the division in parts of Vriddhachalam and Kallakurichi taluks. A sheep breeding farm has been started recently near Chinna Salem. Goats are abundant all over the division.

108. *Agricultural customs.*—Paddy and sugarcane are the important wet crops. The dry crops include ragi, cholam, kambu, varagu, red-gram, ground-nut, gingelly and a variety of others. An outstanding feature of this tract is the cultivation of tree crops like Casuarina and Cashew on a large scale. Casuarina is extensively grown on the coastal areas and plantations in interior parts are not uncommon. In fact some of the plantation in Kallakurichi taluk are on par with the best plantations on the coast. Casuarina is usually preferred to other annual dry crops as it requires very little care and fetches a handsome revenue in about 5 years. Cashew has been in cultivation for over half a centuray in the high laterite tract lying surrounded by Cuddalore, Vridhachalam, Panruti and Vadalur. There are over 12,000 ha. of Cashew under private ownership and with the incentive given by the Government in the form of loans and subsidies the area is expected to go up to 18,000 ha. in about 10 years.

109. Mainly country made implements are in use in all agricultural operations. Use of tractor is getting popular in the Sugarcane and Paddy areas. Electrical pump-sets are fast replacing the picottas.

110. Casuarina is planted at as close as even 75 centimeter by 75 centimeter (varies up to 1.5 meter) in crow bar holes during August. Often the field is either ploughed or hoed before planting. Crops like Cucumbar, ragi, etc., are also grown along with the casuarina in the first year. Even paddy is grown along with casuarina in low lying areas. Three soil workings are given covering the whole field with in January in the first year itself. Watering is done only during prolonged drought. The rotation is usually 5 years. The yield varies from 100 to 175 tonnes per hectare.

111. Cashew seeds are sown in a ploughed field in the plough lines in the month of August. There is no regular espacement. The espacement may be as close as 2 meter by 2 meter. Other field crops like Kambu, Varagu, Ragi, etc. are also grown along with cashew upto the time when it is no longer possible to grow any of these crops. The cashew is thinned when it becomes congested and ploughing is done at least once a year in the gaps. In a crop of nearly ten years, thinning of trees is done not by removing the trees altogether but by lopping off the branches to the extent necessary. Where a large gap is created by the death of tree or where a tree is cut if its yield becomes very poor, regeneration is done in the available gap. So a cashew plantation in a private holding is being managed under a selection system with all age classes represented in the field at any time.

112. Coconut is another tree crop which is grown in all localities like casuarina where conditions are favourable. Palmyrah is the most obiquitous tree in this division throughout the country side which is grown either on the border of fields or as topes in waste lands. Palm gur and neera are getting popular and an institute has been opened at Cuddalore for training people in palm gur manufacture.

113. *The wants of the population.*—The principal demands of the local population on the forests are grazing, fire-wood and manure leaves.

114. *Grazing.*—Grazing is by far heaviest demand on the forests. In addition to the local cattle, a large number of cattle from the intensively culivated delta areas are sent to this division. It is a profession for some people to bring these cattle in the month of August, graze them in the forests, pen them in the patta lands for a fee and then return the cattle to the owners sometime in March—April.

115. The figures for ten years from 1954 to 1963 indicate that an average of 62284 cow units graze in the reserved forests every year. The incidence of grazing is 0.475 ha. for every cow unit. Thus these forests are most heavily grazed.

116. *Firewood.*—There is not much demand for firewood in this division. Most of the demand is met with by the trees in patta lands. In addition, the vast casuarina plantations and the cashew plantations in the division meet the local demands to a large extent. Actually plenty of casuarina is exported outside the district. Except for the Pichavaram felling series, there has been no good demand for jungle wood in the other two series viz. Tagarai and Alwarmalai.

117. *Manure leaf.*—There has been no demand for manure leaf in the reserved forests, though quita a large amount of manure leaves is removed every year from the Jadayagoundan Jaghir by the adjoining villagers. Though there are 3 coupes in Takarai Reserved forests totalling 1,667 ha. in area not a single cart load has been sold so far. Most of the ryots have their own trees for manure leaf.

118. *Industries and their needs.*—The Neyveli Lignite Corporation at Neyveli is the largest industry employing about 17,000 workers. It produces power mainly and shortly a briquette manufacturing unit and an urea plant will be commissioned. Besides there is a clay washing plant. The integrated Lignite Project envisages using the 2000 million tonnes of lignite occurring as a continuous sheet over an area of about 260 km. [2] It is proposed to mine 5.5 million tonnes of lignite per annum for the following use :—

Electricity 400 Mw. using 3 million tonnes

Urea 70,000 tonnes using 0.7 million tonne.

Carbonised Lignite Briquettes	3,80,000 tonnes using 1.8 million tonnes

Char fines, middle oil, tars, phenols, etc., will be the bye-products.

119. The clay washing plant produces about 6,000 tonnes of washed white clay per year.

120. The entire project is estimated at about Rs. 117.72 crores.

121. The project uses plenty of casuarina poles for scaffolding especially during the construction stages and the supply is mainly made by the private casuarina planters.

122. The bliquettes when supplied to the public will, to some extent, ease the demand on fire-wood for domestic use.

123. The East India Distilleries and Sugar Factories (Parry & Co.,) at Nellikuppam manufacture 28,000 to 30,000 tonnes of sugar in a season, about 220 lakhs litres of industrial and rectified spirits about 9,000 tonnes of carbonic acid gas and confectionery. The oil products Corporation at Cuddalore manfactures about 10 tonnes of refined ground nut oil per day. The I.W.J. Bush Products Company at Nellikuppam manufactures about 113 tonnes of various types of non-alcoholic essences, flavours, liquid colours, and preservative and perfume compounds by using aromatic chemicals, synthetic essential oils, natural essential oil, food colours, spices etc. The Premier Fertilisers at Cuddalore manufactures superphosphate and NPK mixtures. There is a Government Ceramic Factory at Vriddhachalam. The Seshasayee Industries at Vadalur manufactures high voltage insulators. None of these industries use forest products except the I.W.J. Bush Products which use the natural essential oils which are obtained from outside this division.

124. Cottage industries are many. They are mat-weaving, palm leaf works, handloom weaving, spinning and weaving of coarse wool, ceramic industry round about Panruti making mainly dolls, brick and tile manufacturing at Panruti, Vallampadugai and Sethiatope, wood carving in Thenkeeranur and Rauthanallur villages of Kallakurichi, oil pressing by a contry chekkus, etc.

125. There is a village model tannery unit at Chinnasalem which is functioning as a tanning cum-production centre. It is funct ioning since 1957 and has trained 70 local artisans upto 1962-63. Tanning industry is likely to develop further in this division in the near future.

126. There are several factories round about Panruti which use cashew nuts. There are 12 factories which separate kernels from the cashew nuts, grade and process the kernels, 16 factories which extract shell oil and 2 factories which refine shell oil. Besides these which work around the year there are a few which work only during the cashew nut season. All these are privately owned and use mainly man power for all operations. In all they consume 3600 to 5000 tonnes of cashew nuts and 330 to 600 tonnes of cashew shell per year. These factories are located in the following places :—

		Panruti.	*Kadampuliyur.*	*Neilithope.*	*Perperiyankuppa.*
Shelling	..	10	2	..	..
Shell oil	..	5	9	1	1
Refined oil	..	2	..	..	..

Section 2—Markets and Marketable Products.

127. *Marketable Products.*—The products that can be marketted are mainly cashew, firewood, sandalwood and minor produce. If the eucalyptus plantation are mature they will also be marketted.

128. *Cashew.*—The market for cashew is Panruti. The entire cashew trade of Madras State is controlled by a few business men at Panruti. Cashew kernels are separated from the shell manually by breaking the nuts and the kernels are graded and sold. Shell oil is extracted out of the empty shells and exported.

129. *Firewood.*—As alread ystated in paragraph 116 the reserved forests cater very little to the needs of the public. The firewood finds a market in every small town and is sold through the local firewood depots. Quite a large amount of casuarins wood is exported to Madras City as billets and posts.

130. *Sandalwood.*—Sandalwood from the reserved forests is very scarce, the crop being young. Any sandal available is departmentally extracted, rough-cleaned and sent to Sathyamangalam Government Sandalwood Depot.

131. A lot of sandalwood is extracted from the Jahir forests of Kalrayans. They are bought standing by private traders, felled, cleaned and exported by them to Sandal oil factories at Kuppam and other places.

132. *Minor forests produces.*—The minor forest produces including tamarind, carissa fruits, wood apple, emblic myrobolan, neem fruits, pungam fruits, elandai and nux-vomica. They are sold in Ulundurpet and Kallakurichi markets and are consumed locally.

Section 3—Lines of Export.

133. This division is well served by rail, road and sea.

134. *Railway.*—The rail routs are :—

(i) Villupuram to Chidambaram.

(ii) Villupuram to Pennadam via Vriddhachalam.

(iii) Cuddalore to Vriddhachalam via Neyveli and;

(iv) Vriddhachalam to Chinnasalem.

135. *Roads.*—There is net work of roads most of them in a good condition. The following are the length of roads in the division.

	Kilometres.
(1) National High-ways	82
(2) State High-ways	101
(3) Major District Roads	1,004
(4) Other District Roads	956

136. There are no forest roads in this division but the following roads pass through the forests as shown below :—

Serial number and name of the road.	*The reserved forests in which the Road is passing through.*	*Starting at.*	*Ending at.*	*Total distance in kilometres.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
		State Highways.			
1 Cuddalore-Ulundurpet-Salem ..	Siruppakkam—URL ..	40·4	41·4	1·609 (1 mile)	....
2 Cuddalore-Vriddhachalam-Salem ..	Krishnapuram—RF ..	61·0	63·0	2·219 (2 miles)	....
		Other village roads.			
1 Iruppu-Manakollai Road ..	Semakottai—R.F. ..	Near Utamikulam ..	Near Koilankuppam pond.	2·600	....
2 Elavathadi-Toppaiyankulam ..	Kallamedu—R.F. ..	Near Cairn No. 35 ..	Cairn No. 30 ..	0·201	....
3 Kudiyiruppu-Visur Road ..	Kangiruppu Bit I ..	Near Cairn No. 217 ..	Cairn No. 73 ..	1·609	....
4 Nadukuppam-Kudiyiruppu ..	Kangiruppu Bit II RF ..	Near Cairn No. 125 ..	Kudiyieeruppu ..	3·219	....
5 Kilkangiankuppam-Kudiyiruppu-Annan-Karankuppam.	Do.	Not available	....	N.A.	....
6 Kudiyanallur-Kottaiyur Road ..	Alwarmalai RF ..	Cairn No. 187 ..	Cairn No. 125 ..	2,615	....
7 Sembiamadevi-Poraiyar Road ..	Do. ..	Cairn No. 31 ..	Near AVI Tank ..	0·805	....
8 Chinnasalem-Nainarpalayam ..	Thottapadi RF ..	$\frac{1}{6}$ mile ..	2/4 miles. ..	1·207	....
9 Naraiyur to Anumanandal Road ..	Krishnapuram RF ..	Cairn No. 164 ..	Cairn No. 46 ..	1·207	....
10 Karunguli Road ..	Do. ..	Road not yet formed.			
11 Arasangudi-Vriddhachalam Salem Main Road.	Do. ..	..	Do. ..		
12 Perperiankuppam Athirukuppam Road ..	Kangiruppu Bit II RF ..	Cairn No. 156 ..	Cairn No. 52 ..	2·313	....

137. *Port.*—Cuddalore is one of the important sea ports in the east coast. Plenty of ores is exported through this port.

SECTION 4—METHODS OF EXPLOITATION AND THEIR COST.

138. *Cashew.*—The right to collect cashewnut from the cashew plantations is being leased out annually in January–February to contractors who maintain necessary staff and labour for protection, collection and marketing. The fruits with the nuts are collected from the trees and they are not allowed to fall after ripening. The nuts are removal from the fruits manually, dried and sold in bags of 77 kilograms. The fruits are sold in the villages and nearby towns and the unsold fruits are heaped up and rotted for manure.

139. The cost varies from one contractor to the other according to his organisation of labour. The following are the details of average cost of collection per tonne of seeds gathered from a number of contractors:—

	Rs. P.
(1) Collection charges of fruits from trees including protection ...	108.80
(2) Transport charges to Forest Depot individual trees, etc. ...	20.00
(3) Separation of fruits from cashewnuts and drying them ...	29.60
(4) Transport charges to market at Panruti for sale	20.00
(5) Over-head charges	20.00
Total cost per tonne ...	198.40

140. *Casuarina.*—The coupes are sold standing to the contractors who organise labour to sell and remove the trees. A hand saw is used to fell and billet the trees and bill hooks are used for pruning the side branches. The trees which are long and straight are transported and sold as poles. The other trees are sawn into billets of about 0.6 m. (2') length stacked and transported by bullock-cart or lorries to the near by markets. Casuarina is usually stacked in 10, long 4, tall and 2, broad stacks each stack being taken as one tonne for purposes of trading.

141. The cost of collection, etc., per tonne are given below.

Serial number.	Name.	Cost of felling and billeting.	Stacking.	Transport charges. Lead.	Transport charges. Cost.
(1)	(2)	(3)	(4)	(5)	(6)
		RS.		Kilometre.	RS.
1	PORTO NOVO Casuarina	5·00	1·00	22·5	4·00
2	ARYAKOSHTI Casuarina	5·00	1·00	22·5	4·00
3	KILLAI AND PICHAVARAM Casuarina	5·00	1·00	19	5·00

Serial number.	Name.	Over-head charges.	Seigniorage.	Total.	Selling price.	Net profit.	Remarks.
(1)	(2)	(7)	(8)	(9)	(10)	(11)	(12)
		RS.	RS.		RS.	RS.	
1	PORTO NOVO Casuarina	2·00	35·00	47·00	50·00	3·00	By road.
2	ARYAKOSHTI Casuarina	2·00	35·00	47·00	50·00	3·00	By road.
3	KILLAI AND PICHAVARAM Casuarina	2·00	34·00	47·00	50·00	3·00	By water and road.

142. *Firewood.*—All fuel coupes are sold standing and they are exploited by contractors engaging necessary mazdoors. Only bill-books and axes are used for felling. The stems are stacked after billeting and are removed either by bullock-carts or by lorries to the nearby markets. The costs of collection, etc., per tonne are given below :—

COST OF COLLECTION (FUEL PER TONNE.)

Serial number.	Name.	Cost of felling and billeting of firewood.	Stacking,	Transportation charges from Coupe to Market. Lead.	Cost.
(1)	(2)	(3)	(4)	(5)	(6)
		RS.		Kilometre.	RS.
1	PICHAVARAM Fuel Series	4·00	2·00	19	10·00
2	ALWARMALAI Fuel Series	5·00	1·00	19	14·00
3	TAGARAI Fuel Series	9·00	1·00	19	7·00

Serial number.	Name.	Over-head cherges.	Seigniorage charges.	Total.	Selling price.	Net profit to contractor.	Remarks.
		(7)	(8)	(9)	(10)	(11)	(12)
		RS.	RS.		RS.	RS.	
1	PICHAVARAM Fuel Series	2·00	9·00	27·00	30·00	3·00	By water and road.
2	ALWARMALAI Fuel Series	5·00	10·00	35·00	40·00	5·00	By road only.
3	TAGARAI Fuel Series	1·00	9·00	27·00	30·00	3·00	By road only.

143. *Minor Forest Produce.*—The cost of collection of Avaram bark and Neem seeds are given below. Figures are not available for other products.

	RS. P.
Avaram bark per kilogram	0 03
Neem seeds per litre	0 08

CHAPTER IV--STAFF AND LABOUR SUPPLY.

SECTION I—STAFF.

The following is the list of staff as on 1st April 1964 :—

Serial number and name of the post. (1)	*Divisional Office.* (2)	*Panruti Range.* (3)	*Vriddhachalam Range.* (4)	*Ulundurpet Range.* (5)	*Kallakurichi Range.* (6)	*Farm Forestry Range.* (7)	*Plantation Range.* (8)	*Total.* (9)	*Permanent.* (10)	*Temporary.* (11)
1 Assistant Conservator of Forests ..	1	..	..	..	..	..	..	1	..	..
2 Forest Range Officer	..	1	1	1	1	1	1	6	1	5
3 Foresters	..	8	5	9	9	8	4	43	3	40
4 Forest Guards	..	8	3	14	8	8	8	49	17	32
5 Reserve Watchers..	..	5	3	8	7	..	..	23	..	23
6 Head Clerk	1	..	..	..	..	..	..	1	..	1
7 Accountant	1	..	..	..	..	..	..	1	..	1
8 Upper Division Clerk	1	..	..	..	..	..	..	1	..	1
9 Lower Division Clerk	6	1	1	2	2	..	1	13	..	13
10 Draftsman	1	..	..	..	..	..	..	1	..	1
11 Typist	1	..	..	..	..	..	..	1	..	1
12 Peons	4	1	1	1	1	1	1	10	..	10
13 Jeep Driver	1	..	..	..	..	..	..	1	..	1
14 Tractor Driver	..	..	1	..	..	..	..	1	..	1
15 Tractor Cleaner	..	..	1	..	..	..	..	1	..	1

This staff was sanctioned under various development schemes.

SECTION 2.—LABOUR SUPPLY

145. Labour was not a problem in the past. With the advent of the Neyveli Lignite Corporation and the various employment opportunities afforded by the developmental activities under the five-year plans, adequate labour is not available now-a-days for carrying out the departmental operations. All the available labourers are employed in the private lands for cultivation and as the important forest operations like ploughing, planting, etc., coincide with the agricultural operations, the forest operations are very often delayed due to want of labour. The low wages offered to the labour as against the attractive wages and food given by the agriculturists is another important factor which deters the labourers from taking up forest works.

146. The daily wages for unskilled labour paid at present as per the schedule of rates are as below :—

	RS.	*Wheras wages in the private sector are.*	
Men	1·25	Rs. 1·50 to 2·00	plus food, etc.
Women	0·75	Rs. 1·00 to 1·25	

147. In future labour scarcity is bound to be acute.

CHAPTER V.

PAST SYSTEMS OF MANAGEMENT.

SECTION 1.—HISTORY OF THE FORESTS.

Political History.

148. The history of South Arcot is not known up to the beginning of the Christian Era. In the Sangam age, i.e., sometime during the first three centuries of the Christian Era, Karikala the Great Chola King is said to have extended his power over the local chieftains of the district called Malayamans, conquered the whole of Tondaimandalam, divided it into 24 kottams for administrative purposes, cleared its forests and constructed its earliest irrigation works.

149. The district was reigned by the Pallavas from the second half of the third century to the end of the ninth century. The period was one of the most glorious in its history. From Pallavas the district came again under the rule of Cholas and remained for nearly 4 centuries starting from Aditya 1. The Cholas left records of their achievements.

150. By the middle of the 13th century Jatavarma Sundara Pandyan conquered the district and the pandyas ruled the area for nearly three centuries. For a short time it was ruled by the Bijapur generals and then by the Marathas and finally it came into the possession of the Moghuls by the end of the 17th century. The Moghuls ruled the district through the Nawabs of Aroct.

151. The British East India Company built Fort St. David at Cuddalore and the French established themselves at Pondicherry mainly for purposes of trade. When war was declared between France and England in 1744, the French and the English shed their commercial character and began to take an active part in the politics of the south. Indeed, their rivalries inevitably compelled them to seek the aid of the Indian Powers, to make alliance and counter—alliance and to plunge the whole country into wars. South Arcot containing both the French and English settlements naturally became the theatre of a great deal of fighting.

152. Hyder Ali invaded the district in 1780 and took Tyaga Drug and Chidambaram. Sir Ayre Coote fought a decisive battle with Hyder at Porto Novo, defeated him and forced him to withdraw from the Carnatic.

153. During the rivalries between the Nawabs of Arcot and the Nizams, first the French under the leadership of Dupleix and later the English under Robert Clive were successful in restoring the position of Nawab of Arcot to those claimants who sought their help. In lieu of the debts which the Nawabs owed to the company, Lord Clive entered upon a treaty on the 21st July 1801 by which the Nawab vested the company with the sole and conclusive administration of the civil and military Government of the carnatic with all the revenues thereof.

HISTORY OF THE FORESTS.

(*i*) *Period up to* 1900.

154. Although the district with the rest of the carnatic came to the possession of the British in 1801, nothing was done for several decades to protect or improve its forests. Grazing, felling or trees and bruning of forest growth was freely allowed. Thus in 1826, Mr. Heath, founder of the Porto Novo Iron Works was allowed to cut fuel from any Government land without any payment for smelting iron. In 1834 this permission was renewed subject only to the payment of trifling sums as royalties.

155. *Seigniorage system.*—In 1860, for the first time, the seigniorage system as at present understood was introduced. The cutting of firewood and timber for sale was made liable to the payment of a fixed rate per cart load and the felling of trees exceeding three feet in girth or belonging to certain listed species was prohibited except with special permission.

156. *Jungle conservancy.*—The jungle conservancy rules were introduced between 1861 and 1868. In 1867, Captain Campbell Walker who was then in charge of the Salem and South Arcot districts, made the first attempt to separate the areas that are to be permanently maintained as forests, with the main object of providing a permanent supply of fuel for the railways. To achieve this object 5 blocks in the Gingee Hills and one block on the slopes of the Kalrayans were selected. At the same time the planting of casuarina was begun from the jungle conservancy Funds in the Malattar river bed and on the coast near Marakanam, Cuddalore and Porto Novo.

157. In 1870, a separate Forest Officer was appointed for the district and in 1874 the existing casuarina plantations were placed under his charge. The selection of forests for the jungle conservancy department for providing fuel to the villages was begun on a large scale. The forests, in those days, were of two classes, Imperial and Jungle conservancy and the Forest Officer had then under him these two classes of forests subject to two different controlling authorities and managed by two different establishments. In the jungle conservancy areas, the protection enforced was exceedingly slight and amounted only to the exclusion of goats and the prohibition of large scale cutting of trees.

158. *Reservation of Forests.*—Systematic conservancy began only after the passing of the Forest Act of 1882. It was not, however till ten years later that the final settlement and demarcation as required by the Act were completed. By this time, considerable damage had been done to the forests by goat browsing indiscrininate cutting of trees and encroachmemnts. Very little of the reserved forests contained good growth whereas the bulk of the areas contained only the poorest and open scrub.

(ii) *Period from* 1900 *to* 1924.

159. Early in this century, a limited quantity of firewood and small timber was extracted from the forests by leasing them to the contractors for working under the coppice with standard system. Grazing was permitted but the felled areas were fenced with brush wood and closed to grazing for five years. The chief minor forest producet collected were manure leaf, cashew-nut, tamarind, soap-nut, date leaves and shells from the back waters. In general the management of the forest was one of more protection. In the first decade casuarina plantations along the coast were attempted on a large scale at the rate of Rs. 32 per acre. Later, as the ryots began to raise extensive plantations on private lands, this was given up.

160. The South Arcot Forest division was formed during the first decade of this century and upto 1924-25 the forests were scientifically managed under working schemes for fuel, minor produce and grazing.

161. The rapid reservation of the forest areas brought in complaints that the reserved forest lines were too close to the fields under cultivation and that too many restrictions were imposed on the people for grazing and obtaining small timber and firewood from the reserves. In the course of years, these complaints and clamours mounted up and were directly responsible for the creation of the Panchayat forest.

(iii) *Period from* 1924 *to* 1955–56.

162. In 1924-25 there came a great change which set the clock back for a time. It happened like this. The forest Committee of 1912 emphasised the need for reducing the contact between the forest subordinates and the villagers to the minimum and recommended that the reserved forests should be classified, according to their nature and situation and the objects which they intended to serve and that the management of the forests which were reserved principally to ensure a continued supply of grazing, fuel and agricultural requisites should be entrusted to the panchayats composed of resident cattle owners.

163. In purusance of this recommendation certain minor forests of this State were transferred to panchayat management in 1914. In 1923 the Retrenchment Committee gave a greater fillip to this policy; for upon its recommendation , special officer was appointed to examine and classify the forests of the then Madras Province into three classes. Of these the first two classes were permanently retained under the forest department and the third which was intended to supply the day-today needs of the ryots were termed 'ryots forests' and were placed under the management of the panchayats. As no special technical knowledge was required for the management of these forests, their control was transferred from the forests department to the revenue department.

164. As only a few forests remained in the South Arcot Division after the creation of the panchayat forests, the South Arcot Forest Division was closed down and the remaining few forests were added on to the neighbouring forest divisions.

Result of Panchayat Management.

165. The transfer of management of forests from the forest department to the panchayat under the control of the Revenue Department proved to be a highly retrograde step. Sir Daniel Richmond, the then Chief Conservator of Forests decried it in no uncertain terms. He took a number of photagraphs of these forests at the time they were handed over to the panchayats and gave them to the Board of Revenue so that the Board might compare them after some years with the conditions of the forests under panchayat management, and see for itself the folly of the measure. His fears were actually borne out in the coming years.

166. During more than twenty years of panchayat management the forests were reduced to mere scrub and when, during the second world war, the fuel crisis developed in Madras City, it was found that these forests were in such a deplorable state that they could hardly meet even the local demands.

167. These forests were returned to the forest department one by one between 1946 and 1949. The vestigial condition in which they were resumed charge was abundant proof of the maltreatments to which they were subjected and the vandalism perpetrated on them. Yet their condition was not beyond repair and so concerted efforts were immediately taken to restore them to their original condition over as large an extent as possible.

Coastal Casuarina Division.

168 During the second world war, the firewood demand in Madras suddenly rose. As coal and diesel were in short supply, the brick-kilns and industries began consuming firewood as a substitute. The popularisation of producer gas units for motor vehicles also necessitated large scale production of charcoal from firewood. Consequently there was heavy demand for firewood and its prices went so high that the Government had to introduce firewood control. It was therefore found necessary to plant casuarina extensively to meet the demands. As a preliminary step an Assistant Conservator of Forests with a staff was placed on special duty for six months to select suitable areas for planting casuarina. During 1944–45, 449 acres were planted in seven localities.

169. *Chingleput Forest Division.*—In 1945, the coastal casuarina division was expanded into a territorial forest division with headquarters at Chingleput and jurisdiction over certain panchayat Reserved Forests and unreserves in Chingleput and South Arcot districts. Thus the Chingleput Forest Division was formed on 16th July 1945 with four ranges, viz., Chingleput Range, Tiruporur Range, Sriperumbudur Range and Marakanam Range. All the ex-panchayat forests of South Arcot division were under the control of Marakanam range. Some more panchayat forests were transferred to this division to extend the casuarina plantations. Tirukoilur Range was formed in 1947 The balance of the panchayat forests in the South Arcot District were transferred to Marakanam and Tirukoilur Range of the Chingleput Forest Division. The territoral

ranges were reconstituted in 1954 and consequently Vridhachalam Range came in existence.

170. In order to rehabilitate the ex-panchayats reserved forests under several schemes of the Second Five-Year Plan three special divisions were formed in 1956 within the Chingleput Forest Division with overlapping jurisdictions. They were the cashew division with headquarters at Adyar, Fodder and pasture division with headquarters at Chingleput and Rehabilitation Division with headquarters at Cuddalore. The Rehabilitation Division was formed on 1st September 1956.

171. *Territorial changes.*—A general reorganisation of the forest divisions was done in 1956, as a result of which the Rehabilitation Division at Cuddalore was reconstituted into a territorial division. Thus the Cuddalore Forest Division was formed on 1st February 1957 with headquarters at Cuddalore. There were five ranges, viz., Tirukoilur, Panruti, Vridhachalam, Ulundurpet and Marakanam ranges with headquarters at Tirukoilur, Panruti, etc., respectively. As the headquarters for Marakanam Range was situated in one corner of the range, the headquarters was shifted to Tindivanam in 1957 and the range was renamed as Tindivanam Range.

172. The Forest divisions were again reorganised in 1959. The Cuddalore Forest Division was bifurcated into Cuddalore South and Cuddalore North Divisions. Thus the present division came into existence on the forenoon of 15th April 1959 with headquarters at Cuddalore.

173. The reserved Forests of Kallakurichi taluk which were under the Salem South Divison were transferred to this division during its formation. There were the following four Rangers with headquarters as below :—

Name of the Range.	*Headquarters.*
(1) Panruti Range	Panruti
(2) Vridachalam Range	Vridachalam
(3) Ulundurpet Range	Ulundurpet
(4) Kallakurichi Range	Kallakurichi

SECTION 2—*Past Systems of Management and their results.*

174 The management of the forests of this division can be divided into four periods as below :—

(1) Early period prior to Panchayat Management.

(2) Period under Panchayat Management.

(3) Period of Development before working. plans.

(4) Period of Working Plans.

(i) ***Early period prior to Panchayat Management.***

175. The forests of the present Cuddalore South Division were formerly under the South Arcot Division. The details of working plans and schemes that were in operation during this period are not available. The management was chiefly one of conservation and exploitation.

(2) *Period under Panchayat Management* (1924 *to* 1944-45).

176. The forests handed over to the village panchayats were managed by Committees consisting of not less than five members of the village. The President of the Panchayat Committee was elected by its members for a term of three years. As stipulated in the Revenue Board's Standing Order No. 195, the members of the Panchayat executed an agreement with the Government in which one of the condition was to pay a fixed amount in respect of each panchayat as compensation to the Government. This amount was fixed by the Government in relation to the grazing fees collected by the Panchayats.

The main duties of the Panchayats were protection, collection of grazing revenue and carrying out improvements as repairs to water sources, dibbling of *Cassia auriculata* seeds, eradication of prickly pear, planting 25 trees and others.

177. Watchers were employed to protect the Panchayat forests and they were paid from the Panchayat funds. A graded system of pay ranging from Rs. 4 to Rs. 10 was fixed to induce them to do good work. As even this low pay was not paid to them at times, they resorted to malpractices. Thus the protection of the forest left much to be desired.

178. The supervision and control of these forest vested with the revenue department and a few Deputy Tahsildars were posted supervise the panchayat work. Due to their want of technical knowledge, the forests deteriorated. The work was later entrusted to an experienced Forest Ranger from 1939 according to G.O. Ms. No. 3153, Development of the 20th Decembr 1938.

179. The forests were worked according to the schemes current at the time of their transfer. The fuel coupes were classified as major and minor. In major coupes the rotation adopted was 25 to 30 years. The silvicultural system adopted was simple coppice with the retention of fruit bearing trees. The coupes were closed to grazing for a period of five years after felling. The revenue from the fuel coupes was remitted to the Government who gave a proportionate amount as compensation for the loss of grazing revenue due to the closure of felled coupes for grazing. No cultural regeneration operation was done. The minor fuel coupes were formed and sold by the panchayats where no major coupes existed. The areas of these minor coupes varied from 4 to 6 hectares and the revenue realised went to the panchayat.

180. Manure leaves were removed from the forests on a three year cycle. The removals were not confined to annual coupes alone but were spread all over the forest area. Different grades of grazing fees were levied according to the quality of grazing available and the animals grazed. The fees varied from a quarter of a rupee for sheep to Rs. 2.00 for a buffaloe. The grazing fees were not uniform and varied from panchayat to panchayat. Very little improvement to grazing except the deepening of a few tanks and wells was carried out.

181. On the whole the general financial position of these panchayats were satisfactory and all of them were working at a profit'

Results of panchayat Management.

182. During this period the forests deteriorated considerably partly due to destructive methods of exploitation and partly due to mismanagement. Regeneration was done to the minimum of planting 25 trees per year. Goat browsing was rampant. Many of the good forests which supported dense forest growth deteriorated into open scrub jungle.

(3) *The period of Development before working plans* (1944–45 *to* 1948–49).

183. During the period preceding Venkataramani's plan the major activity was that of raising casuarina plantations. In addition a few plantations of miscellaneous species were also raised on a small scale. The panchayat forests were taken over one by one and regeneration works were taken up in these forests also. The details of casuarina plantations raised and the results are described under casuarina in this section.

(4) *Period of working plans.*

The various working plans and schemes that have been in operation in the forests of the present Cuddalore South Division are given below :—

For all areas except Kallakurichi range.

(1) Working Plan for the Chingleput division by Sri P. Venkataramani, M.A., I.F.S. (1949-50 to 1963-64).

Working Circles—

Casuarina Conversion Working Circle, Fuel Working Circle, Minor Forest Produce Working Circle, Grazing Working Circle, Manure Leaf Working Circle and Protection Working Circle.

(2) Working Plan for the Cuddalore Division by Sri E. S. Thangam, B.Sc. (Hons.) A.I.F.C. (1956–67 to 1965–66)

Working Circles—

Cashtw Working Circle, Rehabilitation Working Circle, Casuarina Working Circle, Firewood Working Circle, Protection Working Circle and Grazing Working Circle.

(3) Project of Fuel Plantation for Madras City by Sri K. Durairaj, B.Sc. (Hons.), A.I.F.C. Sanctioned in G.O. Ms. No. 2601, Food and Agriculture, dated 6th August 1962.

(4) Farm Forestry Scheme which came into operation in 1960–61 sanctioned in G.O. No. 2424, Food and Agriculture, dated 4th July 1961; and thereafter sanctioned every year.

***For areas in Kallakurichi Range covering Tagarai Parigam, Kannai, Puttai and** Rangappanur Reserved Forests.*

(1) Brazier's Working Plan.

(2) Attur (Thammampatty) Range Working Plan sanctioned in Revenue Board's Proceedings Forest No. 40, dated 8th October 1906.

(3) Preliminary Sandal Working Plan sanctioned in Revenue Board's Proceedings Forest No. 170, dated 6th May 1918.

(4) Working Plan for the Salem South Division by Sri Narasimha Ayyangar sanctioned in Chief Conservator's No. 435, dated 27th October 1931.

(5) Working Plan for the Salem South Division by Sri S. J. Ven Haeften (1942–43 to 1956–57).

Working Circles—

Fuel Working Circle.

Bamboo Working Circle.

Sandal Working Circle.

Manure Leaf Working Circle.

Grazing Working Circle.

Minor Forest Produce Working Circle.

(6) Working Plan for the Salem South Division by Sri K. Durairaj, B.Sc. (Hons.), A.I.F.C. (1957–58 to 1966–67).

Working Circles—

Fuel Working Circle.

Sandal Plantation Working Circle.

Fuel Plantation Working Circle.

Grazing Working Circle.

Minor Forest Produce Working Circle.

Manure Leaf Working Circle.

The past systems of management and their results are discussed under tht following headings :—

(1) Cashew;

(2) Casugrina;

(3) **Fuel;**
(4) **Eucalyptus;**
(5) Sandal;
(6) Rehabilitation;
(7) Minor Forest Produce;
(8) Grazing;
(9) Green Manure; and
(10) Farm Forestry.

CASHEW.

185. Cashew which is an exotic and a native of South America was introduced in India some 400 years ago by the Portuguese settlers. In the lateritic arta of this division cashew has been under private cultivation for nearly a century. The Gazette of the South Arcot District by W. Francis published in 1906 recorded an area of [illegible] hectares (17,000 acres) and the gazetteer published in 1962 recorded an area of 10,125 hectares (25,000 acres) under cashew in South Arcot district.

186. During the Panchayat management three planations of cashew were raised, one in Kangiruppu Bit I Reserved Forest containing about 100 trees, one in Kangiruppu Bit II Reserved Forest containing about 450 trees and another in Velangulam Reserved Forest containing 200 trees. Part of Velangulam Reserved Forest containing these trees is now with the Neyveli Lignite Corporation.

187. The ex-panchayat forests in the lateritic belt of this division when they were taken over by the department were found to contain a poor scrub jungle of no value. Sri V. S. Krishnaswamy, the then Chief Conservator of Forests prepared a state-wide scheme for growing cashew and an area of 5,868 hectares (14,489 acres) was prescribed to be planted up with cashew in the lateritic areas of this division. The scheme was embodied in Thangam's working Plan for Cuddalore Division which came into operation in 1956–57,

188. As per Thangam's plan a total of 5,996.62 hectares was to be planted with cashew under Cashtw Working Circle in this division. Six regeneration series were formed each of roughly 1,000 hectares in area. So far a total of 5,807.66 hectares was regenerated with cashew, 5.464.89 hectares in the prescribed areas and 342.77 hectares in areas outside the working plan prescription. The total cost of the plantations is Rs. 4,53,975, the average cost per hectare being Rs. 78.17. Including the old kumari areas which are 58.27 hectares in extent, tht total area under cashew in 1964–65 was 5,865.93 hectares. The following table gives the areas prescribed and the areas actually planted.

THE AREA PRESCRIBED AND THE AREAS ACTUALLY PLANTED UNDER THE CASHEW WORKING CIRCLE OF THANGAMS' PLAN.

Working Plan Prescription.									
Year of plantation.	Coups number and range.		Name of Reserved Forest.	Area in hectares or acres.		Area actually planted in hectares or acres.		Area planted but not prescribed in working Plan (in hectares or acres).	
(1)	(2)		(3)	(4)		(5)		(6)	
				HCS.	(ACS.)	HCS.	(ACS.)	HCS.	(ACS.)
				A. Kiliruppu Series.					
1956	I	Panruti	Kangiruppu R.F.	203·23	(502·2)	206·39	(510·0)	..	—
1957	II	Do.	Do. ..	207·44	(512·6)	234·71	(580·0)	..	—
1958	III	Do. —	Do. ..	206·15	(509·4)	206·39	(510·0)	..	—
1959	IV	Do.	Do. ..	202·46	(500·3)	236·34	(584·0)	..	—
1959	IV	Ulundurpet — — ..	Kallamedu R.F.	Not prescribed.				217·72	(538·0)
1960	V	Do. — — —	Do. ..	68·15	(168·4)	42·49	(105·0)	—	—
1960	V	Panruti —	Kangiruppu R.F. Bit I ..	141·68	(350·1)	122·62	(303·0)	—	—
1961		Do. .. — ..	Do. ..	..	..	..	(..)	53·42	(132·0)
1962		Do. .. — ..	Do. ..	..	..	..	(..)	6·07	(15·0)
			Total ..	1,029·11	(2,543·0)	1,048·94	(2,592·0)	277·21	(685·0)
				B. Marungur Series.					
1956	I	Panruti .. .. —	Kangiruppu R.F. Bit II ..	210·64	(520·5)	213·27	(527·0)	..	(..)
1957	II	Do. — .. —	Do. ..	204·89	(506·3)	210·44	(520·0)	—	(..)
1958	III	Do. — — ..	Do. ..	207·20	(512·0)	213·27	(527·0)	..	(..)
1959	IV	Do. — — ..	Do. ..	205·18	(507·0)	196·88	(486·0)	..	(..)
1960	V	Do. — — —	Do.	211·33	(522·2)	219·74	(543·0)	..	(..)
			Total ..	1,039·24	(2,568·0)	1,053·40	(2,603·0)	—	(—)

THE AREA PRESCRIBED AND THE AREAS ACTUALLY PLANTED UNDER THE CASHEW WORKING CIRCLE OF THANGAMS' PLAN.

Year of plantation.	Coupe number and range.		Name of Reserved Forest.	Area in hectorce or acres.		Area actually planted in hectares or acres.		Area planted but not prescriped in working Plan (in hectares or acres).	
	Working Plan Prescription								
(1(	(2)		(3)	(4)		(5)		(6)	
				HOS.	ACS.	HOS.	ACS.	HOS.	ACS.
			C. Elavanasur Series.						
1956	I	Now in Cuddalore North Division.	Seedevi R.F. .. –	206·96	(511·4)	–	(–)	–	(–)
1957	II	Ulundurpet	Kuttady R.F.	209·34	(517·3)	210·44	(520·0)	–	(–)
1958	III	Do.	Do. ..	211·33	(522·2)	220·15	(544·0)	..	–
1959	IV	Do.	Alwarmalai R.F.	211·65	(523·0)	..	(..)	..	(–)
1960	V	Do.	Do. ..	213·27	(527·0)	..	(..)	..	(..)
			Total ..	1,052·65	(2,600·9)	430·59	(1,064·0)	–	(..)
			Deduct Coupe No. I ..	206·96					
			Net area of the series ..	845·59	(2,089·5)	430·59	(1,064·0)		
			D. Palakollai series.						
1956	I	Vridhachalam	Semakottai R.F. (North)..	208·21	(514·5)	140·82	(348·0)	..	..
	II	Do.	Do. ..	212·66	(525·5)	193·08	(477·0)	..	–
957	II	Do.	Do. ..	..	(..)	72·44	(179·0)	..	–
1958	III	Do.	Do. ..	209·79	(518·4)	201·94	(499·0)	..	–
1959	IV	Do.	Do. ..	212·70	(525·6)	221·30	(547·0)	..	..
1960	V	Do.	Do. ..	118·25	(292·2)	123·48	(305·0)	..	..
1960	V	Ulundurpet	Kuttady R.F. ..	86·72	(214·3)	48·97	(121·0)	..	..
1952	Nil.	Do.	Do. ..	..	(..)	..	(..)	24·28	60·0
			Total ..	1,048·33	(2,590·5)	1,002·00	(2,476·0)	24·28	(60·0)

E. *Mudanai Series.*

1956	I	Vriddhachalam	Ammeri R.F.	195·10	(482·1)	185·35	(458·85)	..	(..)
1957	II	Do.	Do. ..	134·84	(333·2)	..	(..)	..	(..)
1957	II	Do.	Narimanam	79·12	(195·5)	173·21	(428·0)	..	(..)
1958	III	Do.	Do. ..	244·19	(603·4)	157·83	(390·0)	..	(..)
1959	IV	Do.	Semakottai R.F. (Central Part).	181·82	(449·3)	208·01	(514·0)	..	(..)
1960	V	Do.	Do. ..	204·00	(504·1)	205·18	(507·0)	..	(..)
1961	Nil.	Do.	Narimanam	..	(..)	..	(..)	10·12	(25·0)
1962	Nil.	Do.	Do. ..	..	(..)	..	(..)	31·16	(77·0)
			Total ..	1,039·07	(2,567·6)	929·58	2,297·0	41·28	(102·0)

F. *Mattur Series.*

1956	I	Vriddhachalam	Semakottai R.F. (South).	225·00	(556·0)	252·12	(623·0)	..	(..)
1957	II	....	....	190·81	(471·5)	172·80	(427·0)	..	(..)
1958	III	....	....	168·39	(416·1)	219·34	(542·0)	..	(..)
1959	IV	....	....	211·29	(522·1)	155·80	(385·0)	..	(..)
1960	V	....	....	199·79	(493·7)	200·32	(495·0)	..	(..)
			Total ..	955·28	(2,459·4)	1,000·38	(2,472·0)	..	(..)

Name of series.		Area prescribed in hectares or acres.		Area actually planted.		Area planted by cashew without working Plan prescription.		Old Kumri areas in		Total cashew area Cuddalore South Division in.	
(1)		(2)		(3)		(4)		(5)		(6)	
		HCS.	(ACS.)	HCS.	(ACS.)	HCS.	(ACS.)	HCS.	(ACS.)	HCS.	(ACS.)
A. Kilruppu series ..	.. ..	1,048·11	(2,543·0)	1,048·94	(2,592·0)	277·21	(685·0)	8·24	(8·0)	1,329·89	(3,285·0)
B. Marungur series ..	.. ..	1,039·24	(2,568·0)	1,053·40	(2,603·0)	Nil.	(Nil.)	45·32	(112·0)	1,098·72	(2,715·0)
C. Elavanasur series	.. ..	845·59	(2,089·5)	430·59	(1,064·0)	Nil.	(..)	..	(..)	430·59	(1,064·0)
D. Palakollai series ..	.. ..	1,048·33	(2,590·5)	1,002·00	(2,476·0)	24·28	(60·0)	..	(..)	1,026·28	(2,536·0)
E. Mudanai series ..	.. ..	1,039·07	(2,567·6)	929·58	(2,297·0)	41·28	(102·0)	9·71	(24·0)	980·57	(2,423·0)
F. Mattur serie ..	.. ..	995·28	(2,459·4)	1,000·38	(2,472·0)	Nil.	(..)	..	(..)	1,000·38	(2,472·0)
Total	..	5,996·62	(14,818·0)	5,464·89	(13,504·0)	342·77	(847·0)	58·27	(144·0)	5,865·93	(14,495·0)

189. *Technique.*—The technique prescribed and carried out was cutting regeneration lanes in the natural scrub jungle to a width of 3 metres (10′) and dibbling cashew seeds in pits of 0.3 metres × 0.3 metres (1′ cube) within a saucer of 2.13 metres (7′) diameter. The espacement adopted was 10 metres × 5 metres (33′ × 16½′) with about 200 plants per hectare. The espacement along the regeneration lanes was 5 metres (16½′) and the lanes were 10 metres (33′) apart.

190. It was found that the jungle growth in the lanes did not allow proper development of cashew. The experiments carried out in this connection in 1956 and 1957 Kangiruppu Bit I regeneration areas have amply established that the regeneration lanes have to be widened. The regeneration lanes thtrefore were later widened to 6 metres (20′).

191. Some areas were given for kumri cultivation and when the kumridar cleared the miscellaneous growth uprooted and worked the soil, it was found that cashew was putting on a rapid growth. So from 1959 onwards large areas were given for kumri cultivation and so far 3,246 hectares have been cultivated under kumri. The Conservator of Forests in his inspection notes had observed " the large scale kumri cultivation has not only savd a few lakhs of rupees which would have been spent otherwise for felling and uprooting the intermediate growth, but also brought a general improvement both in stocking and condition of plantations which in 1959 appeared as failure and caused us much anxiety ".

192. Kumri was allowed only for three years in an area at a stretch and when areas fit for cultivation have all been exhausted, there was no demand for other areas either because those areas were poor or the cost of clearing and uprooting the miscellaneous growth was very high. Such areas are being cleared and uprooted departmentally and soil conservation works carried out.

193. According to the prescriptions, the regeneration series were divided into yearly coupes and each coupe into 10 plots, each plot being about 20 hectares. The right to collect the nuts and fruits was hitherto being sold in open auction yearly, the unit of scale being a plot of 20 hectares. According to convenience several units used to be lumped together and sold. The system of autioning the right to collect fruits and nuts every year is working satisfactorily. Though there was lack of competition in the early years, good competition had set in from 1963–64 onwards.

194. *Calculation of yield.*—The following statement gives the yield forecast in the working plan and the yield realised :—

Year.	Yield in kilogram as per Working Plan.	Actual yield.	Revenue in Rupees as per Working Plan.	Actual revenue.
(1)	(2)	(3)	(4)	(5)
1956–57	..	..	..	Nil.
1957–58	—	4,946	..	7,605
1958–59	No yield	2,538	No revenue	7,800
1959–60	..	10,490	..	9,772
1960–61	..	12,834	..	14,746
1961–62	6,80,400	28,575	3,00,000	20,940
1962–63	13,60,800	56,887	6,00,000	59,894
1963–64	20,41,200	77,927	9,00,000	1,45,561
1964–65	27,21,600	Not available	12,00,000	4,04,850
1965–66	34,02,000	..	15,00,000	..
				6,71,168

195. The actual yield and actual revenue include the yield and revenue obtained from old Kumri areas and other natural scattered trees. The working plan assumed a rate of Re. 0.44 per kilogram of nuts. So according to the present rate of more than a rupee per kilogram the amount that should have been realised should have been Rs. 20,00,000 in 1963–64 and Rs. 34,00,000 in 1964–65.

196. The prescription for regeneration, cultural operations and maintenance include dibbling of seeds for initial stocking, replacement of casualties with container seedlings, weeding around each plant for the first two years, climber cutting, clearing intervening growth between the regeneration strips as and when necessary except the belts around each 20 hectares plot, etc. Though dibbling of seeds was done for obtaining regeneration, replacement of casualties was not done with container seedlings with the result the stocking became poor in many of the areas. Large areas were given for Kumri and soil working and clearing of intervening growth were done by the Kumridars. Still there are plenty of areas to be cleared. No climber cutting is being done regularly with the result some of the planations contain trees completely choked by climbers.

197. A mechanical thinning has been prescribed in the tenth year. No thinning has been done so far. Mechanical thinnings is definitely not suitable. One forest guard and one watcher for every 200 hectares and one forester for every 400 hectares have been suggested for the management of the plantations from the third year onwards. The staff suggested has not been engaged.

198. Contour bunds in all Kumri areas, and check dams and gully ploughing have all been suggested in the working plan but no work was done until 1963. Appointment of a plant pathologist, fencing and closure to grazing for the first three years have all been suggested in the working plan. So far no work has been done regarding measures to check pests and diseases. Only in 1964–65 an attempt was made to spray the plantation aerially but this did not take place. There were no fires and no fire lines were maintained. There was no need to have any fencing. The plantations were all closed to grazing as prescribed.

Casuarina.

199. Casuarina is being planted in this division from 1944-45 onwards. The coastal sandy tracts and also the scrub jungles in the inland were planted initially. The technique adopted was clearfelling the existing growth, planting seedlings between July and October in 3 metres(1′ cube) pits at an espacement of 2.13 metres × 2.13 metres (7′ × 7′) and watering them till next June. There was no fencing. No uprooting of miscellaneous roots and ploughing was done with the result most of the plantations were failures. In 1947 further planting was stopped by the Chief Conservator of Forests and efforts were made to replace casualties in the failed areas. As there was no success, the planting was restricted to the coastal areas and river beds like Malattar bed. The reasons for the failure were considered to be due to unsuitable areas, incorrect technique and inadequate attention by the staff. The following areas were planted up before the period of Venkataramani's plan for Chingleput Division.

Locality.	Area in hector. 1945.	1946.	Total.
Kille R. F.	19·42	22·66	42·08
Pichavaram R. F.	..	13·35	13·35
Portonovo U. R. L.	49·78	12·14	61·92
Ariyakoshti U. R. L.	..	33·18	33·18
Iruvelpattu U. R. L.	29·54	31·98	61·52
Tiruthuraiyur U. R. L.	48·16	44·52	92·68
Total	146·90	157·83	304·73

200. Venkataramani in his Working Plan for Chingleput division prescribed an area of 78.57 hectares in this division under Tirukoilur Range Fuel series. An area of 74.72 hectares under prescription an din addition 33.21 hectares in Ariyakoshti unreserved land and 18.23 hectares in Portonovo unreserved land were planted during the plan period. Thusa total area of 126.16 hectares was under casuarina during Venkataramani's plan period.

201. The prescriptions included a rotation of 8 years under clearfelling system, burning the slash ploughing, contour bunding, brick planting at an espacement of 1 × 83 metre (6′ × 6′) fencing, two weedings in the first year, watering about 21 to each plant twice daily for the first 10 days on alternate days for the next 10 days and twice a week for the rest of the period within the first year and pruning in the fourth or fifth year.

202. The espacement was changed to 2.13 metres (7′ × 7′) in 1950 and subsequently to 2.6 metres (8.5′ × 8.5′) in 1954 as even 2.13 metres was considered to be close for the healthy development and also increased the cost of formation because of watering more plants (Chief Conservator's No. 133 of 1954, dated 23rd September 1954). Though ploughing and brick planting were not resorted to, the other prescriptions were followed.

203. Thangam in the Cuddalore working Plan prescribed an area of 106.11 hectares under casuarina working circle. The area actually planted was 172.41 hectares. Besides 16.19 hectares in Iruvelpattu and 32.38 hectares in Tiruthuriyur both in Malattur bed were also planted during the period.

204. Thangam prescribed a rotation of 9 years tentatively, an espacement of 2.6 metres (8.5′ × 8.5′) one well for every 1.21 hectares (3 acres), two weedings in the first year and one in the second year, casualties to be replaced in the first year only, pruning in the fourth year and watering even up to third year. The watering regime was the same as in Venkataramani's plan.

205. The prescriptions were deviated in respect of area and other details. For example the Ariyakoshti area instead of being felled in the course of three years and planted, was felled completely in one year and regenerated in the following year with the result, normal series of age gradations could not be established. The plantations are being felled at the end of the 8th year from 1962–63 onwards and the espacement has been changed to 2 metre × 2 metre from 1963–64 onwards as per Chief Conservator's Reference No. 44155/63 E-1, dated 28th August 1963.

206. Regarding watering the practice now in vogue is to have a well for every 0.4 hectare and watering twice a day for the first 15 days, on alternative days for the subsequent one month, twice a week for the rest of the first year and twice a week from April to June in the succeeding year.

FUEL COUPES.

207. The details of firewood extraction during the panchayat management have already been described in Venkataramani's plan. There were 9 fuel felling series, 8 in the inland and one in the mangroves, with 40 annual coupes each coupe varying from 9.72 hectares to 26.73 hectares in area. The prescriptions were clearfelling and regeneration by simple coppice, reserving tamarind, wood apple, soap nut, *Buchanania latifolia* and other minor forest produce yielding trees and in addition artificial regeneration of 10 per cent of the coupe in strips by clearfelling, burning and planting potted plants of Prosopis, Kodukkapuli and Vagai. Some efforts were made in Swamimalai reserved forest to regenerate the fuel coupes as prescribed (now in Cuddalore North Division) but as the results were not encouraging, no further work was taken up. As the growth was poor in many of the series there was not much of demand for coupes.

208. Thangam's plan continued only one series, viz., Pichavaram Series in the Mangroves. The prescriptions remained the same but in addition, retention of about 37 mother trees per hectare as seed bearers was prescribed. So many mother trees have not

been found left in the coupes. During Thangam's plan, a number of reserved foests were handed over to Neyveli Lignite Corporation for rehabilitating the displaced persons. Before handing over these forests the growth was completely sold in the form of coupes. The District Forest Officer had worked the Alwarmalai series prescribed in Venkataramani's plan as there was demand and this was approved in Chief Conservator's No. 301/62, dated 16th February 1962. The series was continued up-to-date.

209. *Kallakurichi Range.*—In the early working plans for Salem South division, the fuel coupes were worked under coppice with standards, the rotations ranging from 20 to 40 years. This was subsequently modified to simple coppice. Van Haeften prescribed simple coppice under a rotation of 40 years reserving sandal, bamboos, tamarind and other minor produce yielding trees. There was only one series viz. Tagarai Series. During his plan period Rangappanur Fuel Series was opened as an emergency measure with annual coupes of about 40 hectares and the series was continued till 1957–58. Durairaj's plan continued the Tagarai Series. There had been no demand in this range for fuel in 1960–61, 1963–64 and 1964–65.

EUCALYPTUS.

210. A state-wide scheme was prepared by Dorairaj (*vide* paragraph 184) in order to augment the fire-wood resources of the state especially for supply to Madras City by planting fast growing fuel species maily Eucalyptus hybrid (*Eucalptus tereticornisi*. The scheme was sanctioned in G.O. No. 2601,Food and Agriculture, dated 6th August 1962 and came into operation in this division in 1962–63.

211. The scheme prescribed planting of all available areas in this division about 13,438 hectares with fast growing species mainly Eucalyptus hybrid with a tentative rotation of 10 years under clearfelling system and regeneration by planting. Elaborate soil working by completely clearfelling the existing miscellaneous growth uprooting and ploughing have been prescribed. Planting naked seedlings at an espacement of 2 metres by 2 metres to 3 metres by 3 metres, weeding and soil working upto the third year and even wateiing have been prescribed.

212. Much of the area prescribed has been found to be unsuitable for Eucalyptus and therefore instead of 1,750 hectares prescribed annually only the following areas have been planted from 1962–63 onwards :—

1962–63.	1963–64.	1964–65.	1965–66.	Total.
		(AREA IN HECTARES)		
20·24	209·22	202·74	161·87	594·07

213. Though soil working is being done elaborately as prescribed, no waering is being done as it is not only a costly operation but there is no water in the forest areas during the crucial periods. The espacement in force is 2.6 metres × 2.6 metres (8.5′ × 8.5′) Container seedlings are being planted as they are more successful than naked seedlings. Ploughing by country ploughs is not effective and tractors are not available for ploughing all the areas that are to be planted. Therefore the bulk of the area remains unploughed. Except 1963–64 plantation in Pandur U.R.L. the rest of the plantations are good. There are heavy casualties in summer in certain patches due to unfavourable soil factors.

Sandal—Kallakurichi Range only.

214. Sandal is found in the Tagarai reserved forests and to a small extent in the Rangappanur and Parigam reserved forests all belonging to Kallakurichi range transferred from Salem South division. The sandalwood has already been worked departmentally in all the Government lands. Prior to 1915 the exploitation of sandal was done in an unsystematic and random manner. The sandal areas are reported to have contained a number of dead logs of varying sizes lying about with exposed heartwood, the sapwood having rotten and been eaten away by white ants. Systematic extraction began in 1915 when spike was first noticed in Salem South division near Puliam Shola and the Thuraiyur

Pachamalais (now in Tiruchirappalli district). Up to 1923, all spiked trees were extracted. It is not known if the areas now in Kallakurichi range were attacked by spike and any trees were removed. Later from 1924 onwards extraction of spiked and dying trees was not permitted.

215. Van Haeften prepared an ocular stock map of the sandal areas of Salem South Division and divided the stock into dense and sparse. The spiked areas were worked on a three year cycle and the non-spiked areas on six year cycle according to his plan.

216. Durairaj prescribed a three year felling cycle and the exploitation was limited to the removal of dead trees only. Artificial regeneration of at least 4 hectares in each range was prescribed but no work was done so far. Coupes II and III of Periyakallrayan West Sandalwood Felling Series of Durairaj's Plan lie in this division. Except for the removal of 335 kilogram of sandal in 1957–58 there has been no removal in the succeeding years till now. The sandal consists of only younger age classes of not more than 45 cubic metres girth and the area is free from spike.

Rehabilitation of Ex-panchayat Forests.

217. Thangam's Working Plan prescribed a Rehabilitation working circle with an idea to rehabilitate the ex-panchayat forests which had degraded considerably due to mismanagement by the panchayats. Out of the total area proposed in the composite Cuddalore division, an area of 6,363.39 hectares is in the present Cuddalore South division. The areas to be regenerated were divided into 3 categories, viz., A, B and C as below :—

(*a*) areas containing saleable tree growth to be worked as fuel coupes and regenerated by coppice assisted by artificial regeneration. There were no areas in this division under this type.

(*b*) areas which did not contain saleable growth were to be tended and allowed to grow to full maturity. Blanks containing poor stocking of valuable species 7.6 metres to 9.1 metres (25′ to 30′) apart were to be artificially regenerated. Blanks of over 10 hectares were to be artificially regenerated by saucer, sunken-mound or trench and mound methods.

(*c*) the rest of the areas which did not contain active tree stump, trees, pole crops, saplings or established seedlings but contained only space growth were to be regenerated by saucer, sunken-mound or trench and mound methods.

218. There were 5 series as shown below :—

Method.	*Name of the series.*	*Area in hectares.*
B	Thyagadurgam	2,323.14
	Veppur	1,866,33
C	Kudiyanallur	321.19
	Anumandal	2,224.19
	Siruvathur	1,571.23
	Total ...	8,306.68

219. The species recommended were *Albizzia lebbeck*, *Dalbergia sissoo*, *Azadirachta indica*, *Albizzia amara*, *Cassia siamea*, *Pongamia glabra*, *Eucalyptus hybrid*, *Tamarindus indica*, *Acacia leucophloea*, *Acacia arabica*, *Acacia chundra* and others.

220. A tentative rotation of 30 years and a conservation period of 12 years were prescribed. Cultural operations and tending were to be done up to the third year. Fencing was recommended and grazing was prohibited for 5 years.

221. The working plan prescriptions were not followed to a large extent in respect of areas as most of the areas were found unsuitable.

222. The result in most of the areas is highly disappointing, the stocking being poor and the few survivals having only a miserable existence. The poor results of these plantations may be ascribed to various factors like incorrect technique the existence of the natural growth having a tangled mat of root system, damage by hares and porcupines and ineffective control over grazing.

223. After trying several methods and comparing them with the results under kumri methods of regeneration in the past, it was decided in the conservator's conference of 1962 that the best results could be obtained only by a method which conforms to the kumri method involving complete clearfelling, uprooting and soil working. This new technique was introduced in 1963-64 according to the orders of the Chief Conservator of Forests C.C.P./Misc. 265/68, dated 26th September 1962. The espacement was reduced to 2.59 metres (8.5′). The physical targets were reduced accordingly due to closer espacement and intensive technique. The results of the new technique are definitely far superior to those of the previous techniques. The following table shows the areas prescribed in Thangam's Plan and the areas actually planted under different technique's upto 1964-65.

OLD TECHNIQUE.

Name of the series.	*Method.*	*Area prescribrd in hectares up to (1964–65).*	*Area planted according to working to in hectares.*	*Area planted outside the Working Plan in hectares.*	*Area planted under the new technique in hectares.*	*Total in hectares.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Thyagadurgam	B	1,840·99	528·98	..	..	528·98
Veppur	B	1,400·57	485·62	..	28·73	514·35
Kudianallur	C	265·68	42·49	..	..	42·49
Anumandal	C	1,673·53	1,099·13	..	135·17	1,234·30
Siruvathur	C	1,182·62	808·97	..	..	808·97
Other areas	..	..	..	1,471·83	123·88	1,595·66
	Total ..	6,363·39	2,965·14	1,471·83	287·73	4,724·70

Details of areas in hectares planted under the new technique.

Locality.	1963–64.	1964–65.	*Total.*
Krishnapuram R.F.	81·75	53·42	135·17
Kottalamalai R.F.	20·64	..	20·64
Kattumailur R.F.	20·64	8·09	28·73
Kattayanallur U.R.L.	42·49	..	42·49
Melpalangur R.F.	40·47	20·23	60·70
Total ..	205·99	81·74	287·73

MINOR FOREST PRODUCE.

224. Venkataramani and Thangam listed out a number of products and prescribed the annual lease unit to be a range. Cashew, tamarind and avaram bark are sold as separate items according to demand.

Kallakurichi Range.

225. Van Haeften divided the minor forest produce into three kinds, viz., avaram bark, konnai bark and others, divided the forests into a number of farms for each kind of produce and pre cribed each farm to be sold annually. Konnai bark was to be worked on a five year rotation.

226. Durairaj divided the produce into five kinds, viz., avaram bark, konnai bark, tamarind, stone and tree moss and other produce and continued the prescription of Van Haeften. The prescriptions were not strictly followed in this division.

Grazing.

227. During the panchayat management there were different rates for different areas some with a fee of Re. 0.62 (0.10) and some with Re. 0.50. The forests were closed to grazing during monsoon in July and August every year. These systems were continued in Venkataramani's Plan. The Government in the G.O. Ms. No. 3442, Development, dated 25th July 1953, cancelled the monsoon closure and prescribed uniform rates throughout the state as below :—

Buffaloes	0.50
Cows	0.25
Sheep	0.12

There was no change in these in Thangam's Plan. Goats were prohibited and all regeneration and experimental areas continued to be closed for a specified period.

KALLAKURICHI RANGE.

228. Under the earlier working plans, the forests were divided into several blocks, the grazing permits being valid for one block only. The permits were made valid to a range later and then to the entire Salem South division subsequently. Felled fuel coupes were closed to grazing for a period of 10 years. Schemes of deferred and rotational grazing were introduced but were not successful. Penning was allowed in the forests from 1936 onwards. Van Haeften reduced the period of closure in felled fuel coupes and regeneration areas to five years. This was continued in Durairaj's Plan. Durairaj in addition suggested rotational grazing to be tried experimentally. So far nothing has been done towards this

229. In order to augment the revenue of the Forest Department the Government in their No. 58072/D II/64, dated 16th June 1964, Food and Agriculture, have enhanced the grazing fees as below :—

Sheep	0.25
Cattle	0.50
Buffaloe	1.00

Green Manure.

229. (*a*) *Manure leaf removal.*—The removal of green manure leaves from the reserved forests by the ryots for wet cultivation assumed importance during the Second World War and post-war years due to the Grow More Food Schemes. The various Government Orders passed controlling their removal from the reserved forest are described below :—

(1) G.O. Ms. No. 2220, Development, dated 17th October 1942, reduced the rate of a cartload of green manure leaf from Rs. 1.50 to 0.75;

(2) G.O. Ms. No. 3028, Development, dated 27th July 1950, ordered free removal of green manure leaves from the special manure leaf coupes specially demarcated;

(3) G.O. Ms. No. 3028, Development, dated 3rd August 1950; and

(4) G.O. Ms. No. 1090, Development, dated 13th March 1951 ordered the demarcation of all fuel coupes in the state due for felling each year one year in advance of felling and allowing removal of manure leaves by ryots under permits.

(5) G.O. Ms. No. 1524, Agriculture, dated 6th May 1964, ordered that free removal or reduced rates of green manure leaf should be regulated by the issue of permits. Thus the removal of manure leaves from the forests under the control of the department is controlled by the issue of permits and is done under the following three categories :—

(i) Free removal from special green maure leaf coupes;

(ii) Concessional removal from other areas; and

(iii) Free removal from the fuel coupes of the year to follow.

These concessions were continued year after year.

230. Removal of manure leaf was permitted from the coupes under felling in 8 fuel felling series falling in this division in the Venkataramani's Working Plan. The series were Edaikkal, Kuttadi, Sirupakkam, Semakottai (South), Kattumailu, Alwarmalai (North), Alwarmalai (South) and Kangiruppu Bit I.

231. There was no prescription in Thangam's Plan for the removal of green manure leaf.

232. Under Durairaj's Working Plan for Salem South there is one series, viz., Tagari Manure Leaf Series in Tagarai reserved forest with three coupes. So far no removal has been effected from these coupes.

Farm Forestry.

233. This is a plan scheme aimed at the creation of village forests in the village common lands to meet the agricultural, domestic and pastoral needs of the rural community. The scheme is being implemented by the Forest Department. Each panchayat union or Development Block is a unit. The scheme came into operation in 1961–62 in this division as per G.O. No. 2424, Food and Agriculture, dated 4th July 1961, and the following areas have so far been planted in the various Panchayat Unions within the limits of the Cuddalore South Division :—

STATEMENT SHOWING THE FARM FORESTRY AREAS RAISED IN CUDDALORE SOUTH FOREST DIVISION.

Serial number and name of the Panchayat Union.	*Area in hectares.*				
	1961.	1962.	1963.	1964.	*Total.*
(1)	(2)	(3)	(4)	(5)	(6)
	I. Panruti Range.				
Cuddalore taluk.					
1 Panruti	40·47	60·70	40·47	Nil.	141·64
2 Nellikuppam	Nil.	Nil.	40·47	24·28	64·75
3 Kurinjipadi	40·47	Nil.	Nil.	Nil.	40·47
4 Cuddalore	Nil.	Nil.	40·47	20·23	60·70
Chidambaram taluk.					
5 Keerapalayam or Orathur	40·47	20·23	20·23	20·23	101·16
6 Melbhuvanagiri	40·47	20·23	Nil.	20·23	80·93
7 Komaretchi	Nil.	Nil.	40·47	20·23	60·70
8 Kattamannarkoil	Nil.	Nil.	40·47	20·23	60·70
Total ..	161·88	101·16	222·58	125·43	611·05
	II. Vriddhachalam Range.				
Vriddhachalam taluk.					
9 Nallur	40·47	20·23	40·47	25·90	127·07
10 Kammapuram	Nil.	20·23	40·47	20·23	80·93
11 Vriddhachalam	Nil.	Nil.	80·93	20·23	101·16
Total ..	40·47	40·46	161·87	66·36	309·16
	III. Ulundurpet Range.				
Tirukoilur taluk.					
12 Ulundurpet	40·47	60·70	40·47	Nil.	141·64
Vriddhachalam taluk.					
13 Mangalore	40·47	20·23	141·64	20·23	222·57
Total ..	80·94	80·93	182·11	20·23	364·21

234. The special Division for the Reconnaissance survey of Eroded Lands made a detailed survey of all available public lands suitable for plantations in the various taluks of this division and prepared taluk reports. The taluk reports contain the area of the waste lands, the species to be used, technique, etc. The areas are being selected on the basis of these taluk reports.

235. The species used is mainly babul in all lake beds. Casuarina is being planted in the river accretions and miscellaneous species are planted in suitable areas. The espacement for babul is 3.35 metres (11′×11′) and container seedling are used for planting. Containers are used for miscellaneous species also.

236. There is a Farm Forestry Range in-charge of a Range Officer. One Forester and one Forest Guard are working in each Panchayat Union and a plot mazdoor looks after every regeneration plot of 20 hectares or more. Though there was considerable antipathy of the public towards this scheme in the initial stages mainly due to the curtailment of grazing areas, there is a growing awarness of the benefits of the scheme in the recent years. The scheme is generally a successful one in this division.

SECTION 3—SPECIAL WORKS OF IMPROVEMENTS UNDERTAKEN.

(a) *Silvicultural improvements.*

237. (i) *New technique of regeneration.*—The regeneration technique which is being followed from 1962–63 onwards for Eucalyptus and Miscellaneous species is akin to the kumri method. The site for planting is elaborately prepared by clearfelling the existing miscellaneous growth, uprooting and ploughing. The use of polythene bags for growing seedlings has become very popular. The bags lend themselves to easy handling and transportation and can be obtained in large quantities. Casualties under the new technique are very few and the growth of the plants is far better.

238. (2) *Eucalyptus planting.*—4.05 hectares in Alwarmalai addition block was planted with Eucalyptus hybrid in 1959. This is the oldest plantation in this division. In 1962, 4.05 hectares was planted in Tagarai Reserved Forest. The growth here is poorer than Pandur area.

(b) *Soil Conservation.*

239. The areas at the fringes of the Mount Capper Plateau are liable to serious soil erosion and gullies as deep as 5 metres to 10 metres are not uncommon. The people of Meliruppu, Kiliruppu, Semmedu and Talambattu villages sent a petition to the Government stating that their lands are being ruined by the silt brought from the Kangiruppu Reserve Forests and requested the Government to take up soil conservation measures in the forest areas in order to protect their lands. Accordingly the Government directed the forest department to undertake soil conservation work in Kangiruppu Reserved Forests. An area of 76.89 hectares in Kangiruppu Bit I reserved Forest was tackled in 1961–62. By this time the necessity to conserve soil and moisture in cashew areas was also keenly felt. From 1963–64 therefore, soil conservation works was started in this division in the cashew areas. Had this been done earlier, the cashew would have no doubt been benefitted considrably.

240. The soil conservation works include contour bunding, gully plugging and construction of masonary check dams. Side by side the intervening growth in cashew areas is also cleared and uprooted. The contour bunds are 0.76 metres (2.5′) tall, 1.98 metres (6.5′) broad at the base and 0.46 metres (1.5′) broad at the top. The vertical interval between two bunds is 1.22 metres (4′) but not exceeding 45 metres (150′) horizontally.

241. The areas that have so far been tackled are shown below :—

Name of the reserved forest.	Year of plantation.	Area tackled in hectates. 1961–62	1962–63	1963–64	1964–65	Total.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Kangiruppu Bit I	1961	53·42	..	..	..	53·42
	1959	23·47	..	..	..	23·47
	1956	..	..	141·24	..	141·24
	1957	..	..	125·45	..	125·45
	Unplanted area.	..	..	45·73	..	45·73
	1956, 1957	..	..	..	312·42	312·42
Semakottai North	1960	..	..	33·58	..	33·58
Do. South	1959	..	..	55·45	..	55·45
Do. North	1959, 1960	..	..	..	161·87	161·87
Kallamedu	1959, 1960	..	..	118·57	..	118·57
	Do.	..	..	..	161·78	161·87
Total area ..		76·89	..	520·02	636·16	1,233·07

The expenditure incurred up to 1963–64 for an area of 596·91 hectares is Rs. 53,566·62.

(c) Boundary verification.

242. One Special Deputy Surveyor was employed for verification of the boundaries of the ex-panchayat forests. The verification report was submitted to the Conservator of Forests in District Forest Officer's C. No. 3412/60, dated 4th January 1962 and 6th February 1962. Several encroachments were noticed and action was taken to evict the encroachers.

(d) Green manure seed supply.

243. To supply green manure seeds to the agricultural deparmtent for distribution among the ryots green manure seed farms were raised in this division during 1960–61 and 1961–62. Seeds of daincha and sunnhemp were sown in an area of 28.5 hectares in Kattayanallur, Alawarmalai, Krishnapuram and Tagari Reserved Forests. In Krisrnapuram Reserved Forests two wells were sunk and a diesel pumpset fitted up for irrigating the plots. The species were also interplanted in eucalyptus hybrid and teak plots in the Alwarmalai additional reserved land. Some of the plots were failures. Some areas were handed over to the agricultural department for seed collection. 317.5 kilogram of daicha seeds and 270 kilograms of sunnhemp seeds were handed over to the agricultural department and the balance was retained for departmental use.

Other improvements—Buildings, wells, etc.

244. *Buildings.*—There were no buildings in this division when it was bifurcated from the composite Cuddalore division. Three subordinates quarters and a rest house at Kalpadi were transferred to this division from Salem South division in 1959. Since then 8 quarters for the subordinate officers were built in this division. As the Kalpadai Rest House was situated in the submergible area of Gomuki Nadi Project, the rest house was transferred to the Public Works Department. There are no other Government buildings in this division. All the offices are housed in private rented buildings. There are no Government quarters for the District Forest Officer as well as the Range Offices. A list of buildings as on 1st April 1965, is given below :—

LIST OF BUILDINGS IN CUDDALORE SOUTH DIVISION.

	Serial number and type of building.	*Year of construction.*	*Cost of construction.*	*Place.*
	(1)	(2)	(3)	(4)
	PANRUTI RANGE.			
1	Combined Quarters for Forest Guard and Reserve Watcher.	1960–61	6,965·30	Kilkangiankuppam.
2	Combined Quarters for the forest Guard and Reserve Watcher.	1964–65	N.A.	Perperiankuppam.
	VRIDHACHALAM RANGE.			
3	Combined Quarters for Forest Guard and Reserve Watcher.	1960–61	7,150·97	Manakollai.
4	Combined Quarters for Forest Guard and Reserve Watcher.	1960–61	6,990·42	Palayapatnam.
5	Single Forester Quarters	1964–65	..	Aladi.
	ULUNDURPET RANGE.			
6	Combined Quarters for Forest Guard and Reserve Watcher.	1959–60	7,530·08	Varanjaram.
7	Combined Quarters for Forest Guard and Reserve Watcher.	1964–65	..	Sembimadevi.
8	Double Forester Quarters	1964–65	..	U. Keeranur (Ulundurpet).
	KALLAKURICHI RANGE.			
9	Combined Quarters for Forest Guard and Reserve Watcher.	1910	485·00	Paithanthurai.
10	Combined Quarters for Forest Guard and Forest Watcher.	1913	691·00	Parigam.
11	Combined Quarters for Forest Guard and Reserve Watcher.	1913	752·00	Arasampattu.

245. *Wells.*—Three wells were transferred from Salem South Division along with the 3 buildings in 1959. One well was built near the subordinates' Quarters at Varanjaram in 1963–64. A list of wells is given below :—

LIST OF WEELS IN CUDDALORE SOUTH DIVISION.

Serial number and name.	*Year of Construction.*	*Assessment value.*	*Details of structure.*
(1)	(2)	(3)	(4)
ULUNDURPET RANGE.			
1 Well at Varanjaram-Subordinate quarters ..	1963–64	1855·78	Depth of well 21'.0" Brick work in Lime Mortar 1:3.
KALLAKURICHI RANGE.			
2 Well at Arasambattu Subordinate quarters ..	1909–10	80·59	Depth of well 20'0" Brick in mortar 7½' Depth.
3 Well at Paithanthurai Subordinate quarters ..	1910–11	185·00	Depth of well 14'. Rough stone in Mortar 2' and Brick in Mortar 3'—3½".
4 Well at Parigam Subordinate quarters ..	1912–13	207·20	Depth of well 22' 8" Brick in Mortar 9' 8".
OTHER RANGES.			
Nil.			

246. *Machinery.*—There was already a jeep with trailer purchased in the combined Cuddalore division at a cost of Rs. 13,268.59. The following machinery was bought in addition.

Year of purchase.	*Description of the machinery.*	*Make.*	*Accessories.*	*Cost in RS.*
(1)	(2)	(3)	(4)	(5)
1961 ..	.. Diesel oil engine 5 Horse Power ..	Kirloskar ..	Pump set ..	2,491·02
1962 ..	.. Tractor Crawler type	TD 6 International.	One set of cultivator's Bulldozer Draw-bar, etc.	65,900·32

247. *Hand pumps.*—The water table in Malattar bed being very deep, considerable difficulty was experienced in maintaining wells for watering casuarina plantations. In 1963–64, a few hand pumps were installed in the place of wells and they are working very well. They have saved a lot of money which would have been spent on wells.

SECTION 4—PAST YIELD AND REVENUE.

248. The details of yield and revenue from fuel coupes, casuarina, cashew, etc., are given in appendices as below :—

Cashew	Appendix VIII A.
Fuel coupes	Appendix VIII B.
Casuarina	Appendix VIII D
Other Minor Forest Products	Appendix VIII C.
Grazing	Appendix VIII E.

SECTION 5—**Revenue and Expenditure.**

The following statements give particulars of revenue and expenditure from 1959 onwards :—

ABSTRACT OF REVENUE AND EXPENDITURE IN CUDDALORE SOUTH DIVISION.

Year.	*Receipts.*	*Expenditure.* 10 (*b*) *conservancy and works.*	*Expenditure.* 65. *A. Capital outlay on Forests.*	*Expenditure.* *Establishment.*	*Total of columns* (3) *to* (5).	*Deficit for the year.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1959–60	38,814·45	15,235·48	1,07,903·24	2,59,377·97	3,82,516·69	3,43,702·24	..
1960–61	29,233·61	28,191·98	2,02,274·68	1,08,474·13	3,38,940·79	3,09,707·18	..
1961–62	62,676·72	24,817·52	1,72,316·51	1,31,371·50	3,28,505·53	2,65,828·81	..
1962–63	1,16,577·08	23,697·43	2,78,325·75	1,46,045·45	4,48,068·63	3,32,491·55*	..
1963–64	2,18,805·49	40,158·62	3,57,141·83	1,80,657·40	5,77,957·85	3,59,152·36*	..

* The increase in receipts is mainly due to revenue from cashew.

SUMMARY OF REVENUE IN CUDDALORE SOUTH DIVISION.

Head of account.	1959–60	1960–61	1961–62	1962–63	1963–64
(1)	(2)	(3)	(4)	(5)	(6)
L. 1. *Forest Receipts.*					
(*a*) Timber and other produce removed from the Forests by Government—					
I. Agency—Sandal wood	56·00	2,159·00	..	..	..
Other produce—Firewood and charcoal	..	..	..	2,180·77	..
(*b*) Timber and other produce removed from the Forests by consumers of Purchasers—					
Firewood and charcoal	2,319·00	107·00	3,414·00	..	2·00
Grazing and Fodder Grass	2,272·70	1,479·11	2,134·56	2,289·19	2,283·49
Other Minor Forest Produce	2·00	..	..	..	..
(*c*) Drift and waif wood and confiscated—Forest Produce	64·92	22·71	116·59	116·43	69·93
Miscellaneous—					
Fines and Forefeitures	..	150·00	100·00	232·49	..
Rents on Buildings	..	..	..	1·40	..
Other sources	366·89	..	..	6,496·91	3,118·13
RECEIPTS FROM DEVELOPMENT SCHEMES (MAJOR REVENUE IS FROM CASHEW).	33,732·94	24,241·52	55,599·96	1,04,880 37	2,13,395·81
OTHER MISCELLANEOUS RECEIPTS	..	1,074·27	1,326·61	..	..
Total ..	38,814·45	29,233·61	62,691·72	1,16,703·56	2,18,869·36
DEDUCT—REFUNDS ..			15·00	126·48	63·84
GRAND TOTAL, FOREST RECEIPTS ..	38,814·45	29,233·61	62,676·72	1,16,577·08	2,18,805·49

SUMMARY OF EXPENDITURE IN CUDDALORE SOUTH DIVISION.

Head of account.	1959–60	1960–61	1961–62	1962–63	1963–64	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Expenditure.						
1. 10 *Forests*—(*b*) *Conservency and Works*—						
(A) Forest Produceremoved by Government Agency.	..	..	..	4,519·37	..	..
Sandalwood	..	38·00	30·00	..	..	..
(B) Timber and other produce removed from the forests by consumers and Purchasers.	3,657·93	4,682·74	4,334·32	..	5,114.45	..
(C) Renewals or replacements of stones tools and plants.	301·85	195·12	283·95	156·30	..	..
(D) Buildings—	302·23	525·41	1,840·33	1345·22	27·03	..
Rates and taxes	16·50	8·25	..	20·00	8·24	..
Other works	10·00	10·00	15·00	15·00	14·57	..
(E) Conservancy and regeneration	958·07	4,107·35	3,662·77	4,185·40	9,614·79	..
Maintenance of boundaries and other items ..	63·00	63·00	63·00	63·00	63·00	(For 1963–64 the amount spent for other works and other items.
Extension of casuarina plantation	2,069·26	..	..	..	..	..
(1) Reclamation of eroded areas for development of fodder and pasture.	..	1,530·49	..	..	..	..
(2) Schemes financed wholly by the Panchayat Forests managed by Government.	7,856·54	11,005·37	10,640·30	10,777·60	23,182·10	..
(3) Pilot schemes for the cultivation of Green manure crops in Forest areas for seed collection.	..	5,976·25	3,905·39	2,503·54	..	..
(4) Scheme for providing labour and staff amenities.	..	..	..	..	1,855·78	..
(5) Other charges	..	..	42·50	112·00	216·00	..
(6) Other credits	..	50·00	..	..	62·56	..

SUMMARY OF EXPENDITURE IN CUDDALORE SOUTH DIVISION—cont.

Head of account. (1)	1959–60 (2)	1960–61 (3)	1961–62 (4)	1962–63 (5)	1963–64 (6)	Remarks. (7)
Expenditure—cont.						
II. 119-*A Capital Outlay on Forests—C. Development Schemes.—*						
(1) Afforestation of dry fuel forests	50,623·50	36,901·15	9,374·49	2,886·69	..	..
(2) Schemes for construction of residential accommodation for Forest Subordinates.	6,999·08	14,647·27	6,990·42	45·00	100·00	..
(3) Scheme for soil conservation in low hill areas afforestation of dry fuel forests.	..	..	32,848·05	67,324·12	1,30,786·28	..
(4) Expansion of planting activities of valuable commercial timber.	25·10	..	..	..	..	..
(5) Raising fuel trees	..	..	..	10,887·55	1,05,167·72	..
(6) Farm forestry	..	..	33,597·54	59,695·33	1,03,843·22	..
(7) Cashew cultivation	1,98,959·04	1,48,841·01	64,698·96	40,873·43	11,496·68	..
(8) Casuarina plantations (Second Plan) ..	2,771·25	1,885·25	406·50	60·00	..	..
(9) Cashew	..	..	20,619·43	90,646·81	..	..
(10) Casuarina plantation included in Third Plan	..	..	3,781·12	5,906·82	5,747·93	..
III. 70-*C Establishment—*						
(1) Pay of Officer	4,560·00	4,861·93	7,106·65	6,122·58	4,772·58	..
2) Pay of Establishment	39,588·48	62,790·22	83,825·45	94,948·88	18,794·71	..
(3) Dearness Allowance	32,912·80	17,358·13	11,495·35	14,744·80	23,017·32	..
(4) Travelling Allowance and Other Compensatory Allowance.	12,032·71	11,820·31	12,852·96	15,878·47	19,368·65	..
(5) Fixed Travelling Allowance	495·74	624·26	1,739·18	..	..	..
(6) Other Charges	4,045·15	..	..	..	..	..
7) Contingencies	14,268·86	10,934·46	14,351·91	14,342·81	14,704·14	..
8) Other Compensatory Allownces and Medical Allowance.	..	84,82	..	7·91	..	..
Grand total ..	3,82,516·69	3,38,940·79	3,28,505·53	4,48,068·63	5,77,957·85	

SECTION 6—MISCELLANEOUS.

LIST OF OFFICERS WHO HELD CHARGE OF CUDDALORE SOUTH DIVISION.

Serial number and name. (1)	*From* (2)	*To* (3)
1 Sri S. Kondas, B.SC. (Hons.), A.I.F.C.	15th April 1959 ..	13th June 1960.
2 Sri I. A. Fernandez, B.SC.	14th June 1960 ..	31st May 1961.
3 Sri G. Kasthuri Naidu	1st June 1961 ..	13th July 1961.
4 Sri I. A. Fernandez, B.SC.	14th July 1961 ..	13th December 1963.
5 Sri K. R. Venkatesan, B.SC. (Hons.), A.I.F.C. ..	14th December 1963 ..	20th April 1964.
6 Sri S. Sivasailam, B.A.	21st April 1964 ..	Todate.

CHAPTER VI—STATISTICS OF GROWTH AND YIELD.

SECTION 1—STATISTICS RELATING TO CASHEW.

(a) *Stocking.*—A ten per cent stratified random line sampling gave the following position of the stock.

	PER CENT.
Normal Plants	33
Backward Plant	38·6
Blanks	28·4

252. The Details of Stock for each plantation is given belowe.

Serial number. (1)	*Name of the plantation.* (2)	*Percentage of* *Normal plants.* (3)	*Percentage of* *Backward.* (4)	*Blanks.* (5)	*Remarks.* (6)
I	*Kangiruppu R.F. Bit I.*				
1	1956 Cashew Plantation	36	34	30	
2	1957 Do.	29	33	38	
3	1958 Do.	22	49	29	
4	1959 Do.	33	45	22	
5	1960 Do.	26	49	25	
II	*Kangiruppu R.F. Bit II B. Marungur series.*				
1	1956 Cashew Plantation	29	30	41	
2	1957 Do.	16	52	32	
3	1958 Do.	18	55	27	
4	1959 Do.	38	45	17	
5	1960 Do.	39	46	15	
III	*Kuttady and kallamedu R.F. C. Kuttadi series.*				
1	1957 Cashew Plantation, Kuttady	11	28	41	
2	1958 Do.	4	9	87	
3	1959 Cashew Plantation Kallamedu	17	65	18	
4	1960 Cashew Plantation, Kuttady ..	23	55	22	
5	1961 Cashew Plantation, Kallamedu	28	53	19	
6	1962 Cashew Plantation, Kuttady	58	..	42	
IV.	*Semakottai R. F. (North) D. Palakollai Series.*				
1	1956 Cashew plantation ..	53	29	18	
2	1957 Do. ..	42	41	17	
3	1957 Kumri area	..	..	..	
4	1958 Cashew Plantation ..	45	36	19	
5	1959 Do. ..	56	31	13	
6	1960 Do. ..	27	63	10	
V.	*E. Mudanai Series.*				
1	1956 Cashew Plantation Ammeri	12	24	58	
2	1957 Cashew Narimanam ..	27	50	23	
3	1958 Do. ..	19	51	30	
4	1959 Cashew Semakottai (Gentsal)	44	34	22	
5	1960 Do. ..	30	42	28	
6	1961 + 1962 Narimanam ..	91	..	9	
VI.	*Semakottai R. F. (South) F. Mattur Series.*				
1	1956 Cashew Plantation ..	27	27	46	
2	1957 Do. ..	31	41	28	
3	1958 Do. ..	30	45	25	
4	1959 Do. ..	39	40	21	
5	1960 Do. ..	50	32	18	
		33	38.6	28·4	

253. (b) *Yield.*—105 sample plots each of 0.2 ha. were laid during 1964 in the 1956, 1957 and 1958 plantations covering all the series. The yield recorded is given below:—

Year of plantation.	*Age in years.*	*Yield in kg. ha.*		
		Maximum.	*Minimum.*	*Average.*
(1)	(2)	(3)	(4)	(5)
1956	8	368	44	152
1957	7	375	32	122
1958	6	183	20	81

254. The details of yield recorded for various localities is given in the following statement.—

Name of the series.	*R. F.*	*Location of sample plots.*	*Number of sample plots.*	*Yield in Kg. ha.*		
				1956	1957	1958
(1)	(2)	(3)	(4)	(6)	(8)	(7)
Kiliruppu	Kangiruppn Bit I.	Northern side .	8	54	47	32
		Southern side ..	15	44	32	30
Marungur	Kangiruppu Bit II.	Northern side ..	7	49	49	32
		Southern side ..	15	252	104	47
Kuttady	Kuttady	..	10	..	106	49
Palakollai	Semakottai (North).	..	10	368	119	..
Mattur	Semakottai (South).	Northern side ..	15	207	77	128
		Southern side ..	15	89	188	148
Mudanai	Narimanam ..	..	10	..	375	183
		Average per hectare ..		152	122	81

255. (c) *Flowering and fruiting.*—A close record of all the trees in 15 sample plots shows that 90 per cent of the trees flowered and fruited whereas 4·5 per cent of the trees flowered but driedup and 5·5 per cent of trees did not flower at all.

256. (d) *Thinning data.*—Sample selection thinnings were carried out in about 11 ha in 5 plantations and the number of trees that can be removed and the amount of wood obtained are shown in the Table below :—

Year of plantation.	*Locality.*	*Area thinned in ha.*	*No. of trees cut.*	*No. of trees cut per ha.*	*Total.*	*Yield of wood per ha. tonnes.*	*average per tree. tonnes.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(1)
Marungur series.							
1956	Kangiruppu bit II R.F.	1·21	49	40	9·46	7·8	0·19
1958	Do.	1·21	62	52	5·10	4.2	0·08
1959	Do.	1·21	63	52	14·36	11·9	0·23
Old 20 *ha. Kumri*	Do.	1·21	88	72	30·16	24·9	0·34
Mattur series.							
1956	Somakottai R.F. (South)	6·07	172	30	32·68	5·4	0·19

257. (e) *Root and Crown development.*—A study of a few cashew trees for the root crown development shows that the root spreads out far more than the crown and the roots remtain above a level of 2 metre depth.

Locality* : *Kangiruppu Bit II.

Particulars.	*Tree No.* 1	*Tree No.* 2	*Tree No.* 3
Height of the tree in m.	4·00	3·66	1·83
Depth of tap root m.	1·60	1·68	1·62
Maximum radius of crown m.	3·20	3·20	1·83
Maximum radius of lateral roots m. ..	11·90	5·49	5 80
Lengths of lateral roots	13·06	6·63	7·44
	11·43	5·08	6·69
	8·89	5·18	4·80
		3·05	

258. (*f*) *Trade data on cashew*.—(1) Cashew is bought and sold in bags of 77 Kilograms.

(2) The seeds are of different sizes and can be broadly divided into big, medium and small according to size. Therefore the number varies as below :—

Size of the seed.	*Aveyage number of nuts per* Kg.	Litre.
(1)	(2)	(3)
Big	120	90
Medium	190	135
Small	210	175
Assorted	145	182

(3) One bag of cashew nut (77 kilogram) yields 14–16 kilogram of kernels and 55–58 kilogram of shells, the dust and dryage being 8 to 10 kilogram. The cost of separating kernel is Rs. 9 to 11 using manual labour.

(4) One bag of shell weighs 55 kilograms and it yields 13 to 15 kilograms of crude oil, the cost of extraction being 25 paise to 30 paise.

(5) Cost of one bag of nuts during January 1965 was Rs. 85 and one kilogram of shell oil Rs. 0.87 to 1.12.

SECTION 2—STATISTICS RELATING TO CASURINA.

259. A number of sample plots each of 0.2 hectare were laid in the casuarina plantations and trees were measured for height and girth. The espacement of all plantations was 2.6 metres x 2.6 metres (8.5 feet x 8.5 feet) except *Ariyakosti* which was 2 metres x 2 metres ($6\frac{1}{2} \times 6\frac{1}{2}$). The following are the recorded data :—

Locality.	*Year of plantation.*	*Age in years.*	*Number of sample plots laid.*	*Average girth in centimetres.*	*Average height in centimetres.*	*Survival percentage.*	*Yield in tonnes hectare.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Portonovo	1956	8	2	33	11	67	35·56
Killai	1957	7	6	31	12·5	61	33·74
Pichavaram	1957	7	3	33	9·8	72	40·10
Ariyakoshti	1963	2	Random lines.	..	1·04	..	..
Thiruthuraiyur	1962	3	Do.	..	3·14	32	..
Thiruthuraiyur	1963	2	Do.	.	0·57	72	..

A number of stacks of felled casuarina logs were weighed soon after felling and were reweighed after 2 weeks. The dryage was found to be 12 per cent in Killai area.

SECTION 3—STATISTICS RELATING TO EUCALYPTUS TERETICORNIS.

260. The survival percentage, girth and height measurements recorded for *Eucalyptus tereticornis* in Cuddalore South division are given below :—

Locality.	*Year of plantation.*	*Espacement in metres.*	*Age in years.*	*Survival percentage.*	*Average girth in centimetres.*	*Average height in metres.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Alwarmalai	1959	3·35×3·35	5	66	13	3·1
Pandur	1962	2·6×2·6	$2\frac{1}{2}$	56	9·9	2·16

261. In Alwarmalai plantation, the maximum and minimum recorded are girth 53 centimetres and 13 centimetres and height 9 metres and 1.52 metres. Therefore the variation is very wide.

262. A few trees were studied for their root system and the following measurements were recorded by the end of 1964 :—

Locality.	Year of plantation.	Espacement in metres.	Girth in centi metres.	Height in metres.	Depth of tap root in metres.	Radius of lateral roots in metres.	Maximum length of lateral roots in metres.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alwarmalai ..	1959	3·5×3·5	35·5	7·3	1·19	9·1	13·3
Pandur	1962	2·6×2·6	20·3	4.32	1.20	3·3	3·9
Do.	Do.	2·6×2·6	10·0	1·30	0·74	3·2	3·9
Do.	Do.	2·6×2·6	7·5	1·17	0·55	0·66	1·11

SECTION 4—STATISTICS RELATING TO SANDALWOOD.

263. There was no removal of sandalwood in the near past and therefore no data on yield are available. A 10 per cent startified random strip enumeration was done in the sandal area of Tagarai reserved forest and a stock map was prepared. The area covered by the enumeration is 1,191.82 hectares (2,950 acres). The area was divided into 200 metres (10 chains) wide belts running across the contour. In each such belt a line was chosen at random, aligned with compass and trees were counted and measured half a chain on either side of the line. As the available map is in British units, only British units were used in the entire enumeration survey to facilitate stock mapping. The strips were aligned parallel to each other and the central line was measured carefully and pegmarked at every chain to facilitate checking of the enumeration work. Geographical features were also noted down to check the field work with the map.

264. The stock was divided into trees (above 15 centimetres in girth) and regeneration (below 15 centimetres in girth). The trees were divided into 15 centimetres girth classes and the seedlings were divided into two height classes, viz., above two metres and below two metres. Current year seedlings were left out. The result of enumeration is as follows :—

Number of chains enumerated.	Trees.			Regeneration.		
	30–45 centi-metres.	15–30 centi-metres.	Total.	Above Two metres.	Below Two metres.	Total.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2950	472	28	500	973	563	1536
Per acre	1·6	0·1	1·7	3·3	1·9	5·2
Per hectare ..	4	0·25	4·2	8·2	4·6	12·8

PART II.

Future management discussed and prescribed.

CHAPTER I—BASIS OF PROPOSALS.

SECTION 1—GENERAL OBJECTS OF MANAGEMENT.

265. The general objects of management are :—

(i) To improve and increase the area under cashew to obtain maximum yield of cashew nuts;

(ii) To grow Eucalyptus on a large scale to meet at least partially the demands of firewood of Madras City;

(iii) To work the Casuarina plantations for the supply of firewood, on a sustained basis;

(iv) To rehabilitate the degraded forests by planting useful species in order to meet the pastoral and domestic needs of the local population;

(v) To improve and exploit sandal bearing forests;

(vi) To conserve and improve the soil, moisture, flora and fauna; and

(vii) To take all steps to maintain the forests in a state of increasing productivity for obtaining maximum financial return per hectare in perpetuity.

SECTION 2—METHOD OF TREATMENT TO BE ADOPTED.

266. The methods of treatment to be adopted vary with each of the working circles and are described in detail in the following chapters. Prescriptions and suggestions on matters not covered by the various working circles are indicated in a chapter on "Miscellaneous Regulations".

SECTION 3—WORKING CIRCLES AND THEIR AREA.

267. In order to achieve the objects of management the following working circles are constituted :—

	Name of the working circle.	*Area in hectare.*
	(1)	(2)
1	Cashew	6,250·26
2	Casuarina	179·31
3	Eucalyptus	3,025·07
4	Sandal	5,909·14
5	Rehabilitation	1,578·23
6	Minor forest produce	All Forest areas.
7	Grazing	All Forest areas except closed areas.
8	Soil conservation	10,000·00

SECTION 4—PERIOD OF THE WORKING PLAN.

268. This working plan will be in force a period of 10 years from 1st April 1966 to 31st March 1976.

CHAPTER II—WORKING PLAN FOR CASHEW WORKING CIRCLE.

SECTION 1—GENERAL CONSTITUTION.

269. The working circle will comprise of all areas regenerated with cashew so far under the previous plan and also the areas remaining unplanted in Ammeri and Velangulam reserved forests.

SECTION 2—AREA AND DISTRIBUTION.

270. The area of the working circle is, 6,250.26 hectares divided into the following six series :—

Name of Range.	*Name of the series.*	*Name of the Reserved Forests.*	*Area in hectares.*		*Total.*
			Planted.	*Proposed.*	
(1)	(2)	(3)	(4)	(5)	(6)
Panruti	1. Kiliruppu ..	Kangirupp Bit I ..	1,069·19	Nil.	1,069·19
	2. Marungur ..	Kangirupp Bit II ..	1,098·71	Nil.	1,098·71
Ulundurpet	3. Kuttady ..	Kuttady	503·81	Nil.	764·01
		Kallamedu	260·20	Nil.	
Vriddachalam ..	4. Palakollai ..	Semakottai (Part).	952·92	Nil.	1,224·16
		Velangulam ..	161·87	109·37	
	5. Mudanai ..	Semakottai (Part).	413·17	Nil.	1,093·83
		Ammeri	195·05	113·31	
		Narimanam ..	372·30	Nil.	
	6. Mattur ..	Semakottai (Part).	1,000·36	Nil.	1,000·36
		Total ..	6,127·58	222·68	6,250·26

271. Each series is divided into a number of annual coupes with a 20 metrewide cleared line all around serving as boundary between two coupes. Each coupe is subdivided into a number of plots each plot measuring about 20 hectares in area. The division of each series into coupes is given in the following statement :—

CASHEW WORKING CIRCLE.

Year of planting.	*Coupe number.*	*Name of range.*	*Name of Reserved Forest.*	*Area in hectares.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
			(A) Kiliruppu Series.		
1956	I	Panruti range	Kangiruppu Bit I	206·39	10 Plots.
1957	II	Do.	Do.	234·72	10 Plots.
1958	III	Do.	Do.	206·39	10 Plots.
1959	IV	Do.	Do.	236·34	10 Plots and Kumri area.
1960	V	Do.	Do.	122·62	6 plots 3·24 Hectares plots.
1961	VI	Do.	Do.	53·42	1 Plot.
1962	VII	Do.	Do.	6·07	1 Plot.
Year not available ..	Old Kumri.	Do.	Do.	3·24	1 Plot (it fells in Coupe No. IV).
			Total ..	1,069·19	
			(B) Marungur Series.		
1956	I	Panruti range	Kangiruppu Bit II	213·27	10 Plots.
1957	II	Do.	Do.	210·43	10 Plots.
1958	III	Do.	Do.	213·27	10 Plots.
1959	IV	Do.	Do.	196·67	10 Plots.
1960	V	Do.	Do.	219·74	10 Plots.
			Total ..	1,053·38	

Years of planting. (1)	Coupe number. (2)	Name of range. (3)	Name of Reserved forest. (4)	Area in hectares. (5)	Remarks. (6)
			Old Kumri area.		
Year not known	..	Panruti range	Kangiruppu Bit II	4·86	It falls in Coupe No. IV.
1950–51	..	Do.	Do.	10·12	It falls in Coupe No. III.
1951–52	..	Do.	Do.	20·23	Do.
1952–53	..	Do.	Do.	10·12	Do.
			Total	45·33	
			Grand total	1,098·71	
			(C) Kuttady Series.		
1957	I	Ulundurpet range	Kuttady Reserved Forest	210·43	10 Plots.
1958	II	Do.	Do.	220·14	10 Plots.
1959	III	Do.	Kallamedu Reserved Forest.	217·71	10 Plots.
1960	IV	Do.	Do.	42·49	2 Plots.
1961	V	Do.	Kuttady Reserved Forest	48·96	2 Plots.
1962	VI	Do.	Do.	24·28	1 Plot.
			Total	764·01	
			(D) Palakollai Series.		
1956	I	Vridhachalam	Semakottai Reserved Forest (North).	140·82	7 Plots.
1957	II	Do.	Do.	193·03	10 Plots.
1957	Part II	Do.	Do.	72·44	4 Plots Kumri area.
1958	Part III	Do.	Do.	201·94	16 Plots.
1959	Part IV	Do.	Do.	221·36	12 Plots.
1960	Part V	Do.	Do.	123·43	2 Plots.
1965	VI	Do.	Velangulam Reserved Forest	161·87	Future regeneration areas.
1966	VII	Do.	Do.	109·87	
			Total	1,224·16	

(*E*) *Mudanai series.*

1956	I	Vriddhachalam range.	Ammeri Reserved Forest	185·34	8 plots in 1956 plantation.
Year not known	..	Do.	Old Kumri	9·71	
1957	II	Do.	Narimanam Reserved Forest	173·20	13 plots.
1958	III	Do.	Do.	157·82	8 plots.
1959	IV	Do.	Semakottai (Central portion)	208·00	10 plots (and two Kumri areas 11 and 12).
1960	V	Do.	Do.	205·17	10 plots.
1961	VI	Do.	Narimanam Reserved Forests	10·12	1 plot.
1962	VII	Do.	Do.	31·16	1 plot.
1967	VIII	Do.	Ammeri Reserved Forests	113·31	To be planted.
			Total	1,093·33	

(*F*) *Mattur series.*

1956	I	Vriddhachalam range.	Semakottai (South)	252·11	10 plots.
1957	II	Do.	Do.	172·80	8 plots.
1958	III	Do.	Do.	219·34	13 plots.
1959	IV	Do.	Do.	155·80	7 plots.
1960	V	Do.	Do.	200·31	10 plots.
			Total	1,000·36	

SECTION 3—ANALYSIS OF THE CROP.

272. Except for a few old kumri plantations, the entire crop was planted between 1956 and 1962 and therefore is quite young.

273. A 10 per cent enumeration was done in the entire area under cashew in this division. The method adopted was stratified random line sampling. Out of every ten lines of cashew, one line was chosen at random and enumeration was done to find out the stocking, growth of trees, etc. The enumeration revealed that only 33 per cent of the trees are of normal growth, 28.4 per cent blanks and the rest 38.6 per cent being backward plants not capable of yielding in the near future. So whatever revenue is realised at present is through these 33 per cent of trees only. The details of stocking, etc., for each series are given in paragraph 283.

274. The crop is not uniform. There is not only difference in growth between one plot and the other but also within one and the same plot and betwen neighbouring plants. The disparity in the crop may be ascribed to the difference in the soil from place to place and the inherent difference in vigour of the individuals.

275. Some of the plantations which are more than four years in age are so congested that they need thinning whereas in some other areas the crop is open even after 7 or 8 years. At the same time, there are gaps here and there in the plantations ranging from one acre to several acres which need restocking.

276. In most of the areas, the intervening jungle growth has not been cleared. The jungle growth not only affects the proper development of cashew but also makes collection of fruits and seeds difficult, affecting the revenue to a certain extent.

277 In areas where the jungle growth has been cleared under kumri cultivation without any soil conservation work, there is heavy run off resulting in severe sheet and gully erosions. In spite of clearing, in some of the places the jungle growth has reasserted itself and looks as if no cleaning has been done.

278. Therefore, the crop needs several intensive cultural operations, viz., restocking, thinning, clearing of intervening growth, soil working, soil and moisture conservation, manuring, etc., besides plant protection measures.

SECTION 4—METHOD OF TREATMENT.

279. The treatment proposed will aim at (1) extending the area under cashew by planting fresh areas, (2) continuing the exploitation of cashew plantations by leasing out annually the right to collect the fruits and nuts, (3) maintaining the plantations in a high productive capacity by adopting proper cultural measures like soil conservation, thinning, regenerating the gaps, manuring climber cutting, ploughing, etc., and (4) protecting the plantations from pests and diseases.

280. *Silvicultural system.*—The silvicultural system will be clearfelling followed by artificial regeneration. (No area will come for clearfelling during this plan period.) However, it is found in some of the older plantations that a number of seedlings are coming up naturally in the gaps. If, in due course it is found that the natural regeneration is adequate, there will be no need to resort to whole-sale artificial regeneration except for filling up the gaps. It will be enough if the regeneration is tended properly. In such a case the crop is likely to approximate to a selection crop.

281. *Choice of species and variety.*—The species used will be *Anacardium occidentale Linn.* It is well-known that several varieties of cashew exist. As the object of management is to produce the maximum amount of nuts, only the heavy yielding variety should bechosen. No work has been dcne so far to isolate a high yielding genotye. Moreover, as the seeds of good yielders do not produce only heavy yielders; it is necessary to select good yielders and propagate them vegetatively by air-layering.

282. *Rotation.*—As the yield falls after about 20 or 25 years and as the tree dies naturally in about 40 years in low rainfall areas, a tentative rotation of 30 years is presccribed as in the previous plan. However, the rotation is liable to revision in due course after studying the yield pattern.

283. *Espacement.*—The espacement prescribed is 5 metres by 5 metres. The present espacement of 5 metres × 10 Metres is very wide but was adopted under a different technique when planting was done in regeneration lanes. When now the jungle growth is completely clearfelled and uprooted, a closer espacement is advantageous. Moreover as cashew begins to yield from the second year onwards, it is desirable to have as many plants as possible initially to obtain good yield and hence the need for closer espacement. The excess of plants will be thinned out in due course.

284. *Regulation of yield.*—The yield will be regulated by area. The cashew nuts and fruit will be harvested annually through the agency of contractors. The unit of sale will be a plot of 20 ha. in the case of regular plantations and one kumri plantation however small it may be. The District Forest Officer may include two or more plots in a unit of sale if necessary.

285. *Calculation of yield.*—A cashew tree during the prime of its yielding years can yield about 14 kilograms of nuts per year though exceptionally big trees are known to yield up to 45 kilograms even. The yield from a hectare of normal plantation varies from 900 kilograms to 1,345 kilograms though an yield of 2,800 kilograms, through rare, is not unknown. The yield depends upon a variety of factors such as the soil, the genetic quality of the stock, seasonal rainfall, diseases, pests, etc. Further it has been noticed that bumper crops of cashew nuts occur only once in three years or so, like mango, depending upon climatic conditions.

286. Data on yield were collected in the 1956, 1957 and 1958 plantations during 1964 and the figures were 152 kilograms, 122 kilograms and 81 kilograms respectively per hectare (for details see Chapter VI). Allowing an increase for the future, an yield of 200 kilograms per hectare may be expected from the tenth year onwards. This figure applies only to the present condition of the plantations which is also likely to deteriorate if proper tending is not carried out.

287 The maximum recorded for a seven year old plantation is 375 kilograms per hectare which after the tenth year may yield more than 400 kilograms per hectare. So if the plantations are looked atfer well by carrying out all cultural operations, soil conservation, etc., the average yield from the plantations can be raised to even 400 kilograms or more per hectare. While, if the plantations are neglected, the yield is likely to go down to even 50 kilogramms per hectare as recorded for some of the plantation.

288. Taking various factors such as erratic yield of cashew, differences in site factors and difference in ages of plantations, an average annual yield of 200 kilograms per hectare or 1,200 tonnes for the entire division up to 1970 and 300 kilogram per hectare or 1,800 tonnes for the entire division atfer 1970 may be expected.

Section 5—Regeneration.

289. Cashew will be planted in the newly prescribed areas by completely clearfelling the natural growth, uprooting and ploughing. Wherever there is demand for kumri, regeneration will be done only under kumri, the departmental planting restricted to other areas. The following areas will be planted within the first three years of this plan period :—

		hectares.
Ammeri Reserved Forest	..	113·31
Velangulam Reserved Forest	..	109·37
Total		**222·68**

290. *Preparation of the site.*—The site for regeneration will be prepared one year ahead of planting. The right for kumri cultivation will also be given one year ahead of the planting year. The area after survey and demarcation will be completely clearfelled, uprooted and bunded. In the kumri areas, the kumridars will do bunding on all the four sides of their respective kumri areas.

291. During the year of planting, the area will be thoroughly ploughed in June-July using tractors. After ploughing, the area will be aligned and staked.

292. *Collection of Seeds.*—Seeds will be collected from nature trees which are heavy yielders. Since the period of viability of cashew seeds is only about 8 months, the seeds should be collected in the same year just prior to planting.

293. *Dibbling.*—Before dibbling, the seeds will be immersed in water. All floating seeds will be rejected and only those which sink readily will be dibbled. Dibbling will be done at the rate of two seeds per spot. No pitting is necessary as the area is ploughed The soil will be scooped out and the seeds dibbled at a depth of 5 to 7 centimetres. The best time for dibbling is the month of August.

294. *Replacement of casualties.*—All casualties will be replaced during the first year itself using container seedlings. No replacement should be done beyond the planting season. Replacements will be done only in cases where there are no cashew plants in the row within 33 feet of existing cashew plants.

SECTION 6—SUBSIDIARY SILVIAULTURAL REGULATIONS.

295. Cashew is a horticultural crop and it requires tending throughout its life to ensure good growth and maximum yield. Tending will consist of clearing the intervening growth if any, soil working, climber cutting, thinning and manuring.

296. *Clearing of intervening jungle growth.*—Even if the original jungle growth is completely cleared before planting, it reasserts itself in the succeding years and if unattended, grows luxuriantly and swamps cashew. Therefore it is necessary to remove the growth periodically to promote the growth of cashew. This will be done either manually or using tractors.

297. *Soil Working.*—The tract in which cashew has been planted and also proposed in this plan, has water table at a depth of not less than 10 m. The roots of tree species rarely penetrate beyond 1.5 m. in depth and therefore have to necessarily subsist on the moisture available due to rains within one or two metres of the top soil. Therefore, efforts have to be made to absorb as much of moisture as possible without any run off and also conserve the same in the soil. In addition to bunding, it is necessary to work the soil intensively to absorb and conserve more moisture. Moreover as the soil in these areas tends to become hard like a rock, when dry, the soil has to be loosened by working to promote soil aeration and root growth. Though it will be ideal to work the soil every year, it is not only costly but also impracticable due to the vastness of the area under cashew to be covered. However, it is necessary to work the soil atleast once in five years. It is prescribed therefore that soil should be worked to a depth of at least 15 centimetres once in five years. In areas where no Kumri has so far been done soil working should be completed within the first three years of the Working Plan.

298. Tractors can be employed with advantage as the area to be covered in each range is fairly large. As manual working will be costly and as country ploughs do not work the soil deeply, tractors are suggested.

299. In current regeneration areas, two soil workings will be done in the first year, one in September and the other in December. Another soil working may be done in the second year if necessary. While working the soil, the whole area will be worked instead of around individual plants. Tractors are suggested to be used instead of manual labour for soil working.

300. *Thinning.*—Cashew is a horticultural crop yielding fruits and nuts. It requires plenty of sunlight and aeration to produce maximum number of flowers, fruits and nuts. As the initial espacement adopted in all the plantations is 5 meters × 10 metres and as the espacement for future plantations will be 5 meters × 5 meters it is necessary to thin out the plants periodically to maintain the plantations in a state of maximum vigour and productivity.

301. As the trees differ from one another significantly in vigour and yield, only a selective thinning must be adopted to remove the less vigorous and less productive trees. The object of thinning is to retain maximum number of good trees in an uncongested and healthy condition.

302. Thinning will be done only when trees in a plantation being to over-lap with one another. Trees will be marked for thinning in March–April when they are in fruits. The following rules are prescribed when trees are marked :—

(i) Plants poor in health, vigour and yield will be marked.

(ii) When there are three or more trees of equal vigour and yield, the alternate plants will be marked.

(iii) If there are two good trees in a line with poor trees on either side, both the good trees will be left.

(iv) No trees will be marked wherever there is no congestion.

303. Since there are deaths of trees due to disease, insect attack, etc., and as thinning is subject to human errors, it is necesary to leave a minimum number of trees after every thinning.

304. Though it will be ideal to undertake thinnings frequently, it is not practicable to do so as the area to be covered is vast. At the same time, it is not desirable to extend the thinning interval beyond 5 years as the crop gets very much congested affecting the yield. Therefore, a thinning cycle of 5 years is prescribed.

305. All the plantations will be thinned twice during this plan period. Since there are likely to be death of trees due to diseases, insect attach, etc., it is necessary to ensure a minimum number of trees per unit area after every thinning so that the plantations are not left understocked. It is therefore prescribed that a minimum of 125 trees per hectare shall be left after the second thinning. At the end of the first thinning a minimum of 150 trees per hectare shall be left in areas which were planted at 5 meters × 10 metres espacement and 250 trees per hectare in areas planted at 5 meters × 5 meters espacement.

306. Experimental thinnings in earlier plantations indicate that an average of 10 tonnes of fuelwood per hectare may be obtained from a plantation of about 10 years in age. The yield is expected to cover the cost of thinning.

307. While thinning, the trees will be cut and uprooted so that the stamps do not hinder soil working.

308. For purposes of thinning the plantations are arranged into 5 groups under each range as shown below :—

Group number. (1)	*Years of thinning.* (2)	*Name of the series.* (3)	*Year of plantation.* (4)	*Area in hectares.* (5)
		PANRUTI RANGE.		
			Old Kumris.	48·57
I	1966 and 1971	Kiliruppu	1956	206·39
		Marungur	1956	213·27
			Total ..	468·23
II	1967 and 1972	Kiliruppu	1957	234·72
		Marungur	1957	210·43
			Total ..	445·15

Group number.	Years of thinning.	Name of the series.	Year of plantation.	Area in hectares.
(1)	(2)	(3)	(4)	(5)
		PANRUTI RANGE.		
III	1968 and 1973	Kiliruppu	1958	206·39
		Marungur	1958	213·27
			Total ..	419·66
IV	1969 and 1974	Kiliruppu	1959	236·34
		Marungur	1959	196·67
			Total ..	433·01
V	1970 and 1975	Kiliruppu	1960	112·62
		Marungur	1960	219·74
		Kiliruppu	1961	53·42
			Total ..	395·78
		ULUNDURPET RANGE.		
I	1966 and 1971	Kuttady	1957	210·43
II	1967 and 1972	Do. ..	1958	220·14
III	1968 and 1973	Do. ..	1959	217·71
IV	1969 and 1974	Do. ..	1960	42·40
V	1970 and 1975	Do. ..	1961	49·96
		Do. ..	1962	24·28
		VRIDDHACHALAM RANGE.		
I	1966 and 1971	Palakollai	1956	140·82
		Mudanai	1956	185·34
		Do.	1961	10·12
		Do.	1966	109·37
		Mattur	1956	252·11
			Total ..	697·76
II	1967 and 1972	Palakollai	1957	265·47
		Mudanai	1957	173·20
		Do. ..	1962	31·16
		Do. ..	1967	113·31
		Mattur	1957	172·80
			Total ..	755·94
III	1968 and 1973	Palakollai	1958	201·94
		Mudanai	1958	157·82
		Mattur	1958	219·34
			Total ..	579·10
IV	1969 and 1974	Palakollai	1959	221·36
		Mudanai	1959	208·00
		Mattur	1959	155·80
			Total ..	585·16
V	1970 and 1975	Palakollai	1960	123·47
		Do. ..	1965	161·87
		Mudanai	1960	205·17
		Kumris		9·71
			Total ..	500·22

309. The trees for thinning will be marked when they are bearing i.e. between March and May and felled in June—July.

310. *Climber cutting.*—Climbers like *Hemidesmus indica, Acacia intsia* and *Dioscorea* species come up profusely in all cashew areas. They spread themselves over the entire tree affecting its growth as well as yield. They should be cut and tubers if any removed. This should be done along with thinning.

311. *Manuring.*—Wherever cashew is found to be less vigorous and poor in yield, it is necessary to apply some fertiliser. Organic fertilisers like steramine are recommended for application at the rate of 1 kilogram per tree every year. Experimentation is necessary to find out the right type of fertiliser and the dosage.

312. *Filling gaps.*—All gaps measuring 10 acres or more will be replanted with container seedling at 5 metres x 5 metres. Small gaps will be ignored. The plants will be thinned out in due course, along with the main plantation

313. *Tending Cycle.*—All the cultural operations like clearing of intervening growth, climber cutting, soil working and manuring will be combined and done in a single year as a single operation. A three year cycle is prescribed The following schedule shall be followed :—

Operation.	*Season.*
(i) Clearing jungle growth and climber cutting ..	January to March
(ii) Soil Working	June to November
(iii) Application of fertilizers	October to November

314. The plantations are arranged into three groups under each range. The first group will be tended during the years 1966, 1969, 1972, 1975, etc., the second group during 1967, 1970, 1973, 1976, etc., and third group during 1968, 1971, 1974, 1977, etc. The following table shows the arrangement of plantations into three groups under each range :—

Group number.	*Name of the Series.*	*Year of Plantation.*		*Area in hectares.*
	Panruti Range.			
I	Kiliruppu	1956		206·39
	Do. ..	1957		234·72
	Do. ..	1961		53·42
	Marungur	1956		213·27
			Total ..	707·70
III	Marungur	1957		210·43
	Do. ..	1958		213·27
	Kiliruppu	1958		206·39
	Kumris	..		48·57
			Total ..	678·66
III	Kiliruppu	1959		236·34
	Do. ..	1960		122·62
	Murungur	1959		196·67
	Do.	1960		219·74
			Total ..	775·37
	Ulundurpet Range.			
I	Kuttady .. .. .. —	1957		210·43
	Do. .. .. .. —	1960		42·49
				252·92
II	Kuttady	1958		220·14
	Do. .. .. .. —	1961		48·96
			Total ..	269·10

Group number.	Name of the Series.	Year of plantation.		Area in hectares.
(1)	(2)	(3)		(4)
	Ulundurpet Range.			
III	Kattay	1959		217·71
	Do.	1962		24·28
			Total ..	241·99
	Vriddhachalam Range.			
I	Palakollai	1956		140·82
	Do.	1959		121·36
	Do.	1965		161·87
	Mudunai	1956		185·34
	Do.	1959		208·00
	Mattur..	1956		252·11
			Total ..	1,169·50
II	Palakollai	1957		265·47
	Do.	1960		123·47
	Do.	1966		109·37
	Mudunai	1957		173·20
	Do.	1960		205·17
	Mattur	1957		172·80
			Total ..	1,049·48
III	Palakollai	1958		201·94
	Mudanai	1958		157·82
	Do.	1961		10·12
	Do.	1962		31·16
	Do.	1967		113·31
	Mattur	1958		219·34
	Do.	1959		155·80
	Kumris			9·71
				1,099·20

SECTION 7—OTHER REGULATIOS.

315 *Sale of produce.*—The right to collect cashew seeds and fruits will be sold annually, the unit of sale being a plot of about 20 hectares. The kumri areas will be sold even in smaller units. A list of units of sale is given in Appendix VII. However, the District Forest Officer will have the discretion to combine 2 or more units and sell.

316. The auction will be an open one conducted in February. The lease period will be up to the 31st of May. The lessees shall be required to protect the crop during the lease period and shall keep the crop free of all climbers. The lessees will also be responsible for the upkeep of the stones and trees which may serve as boundary features. All soil conservation works like bunds, check dams, etc., will also not be tampered with by the lessees.

317. If the lessees come forward to undertake all the cultural operations like clearing the intervening growth, ploughing, etc., the lease period may be extended to not more than three years.

318. *Pest and diseases control.*—Though most of the pests and diseases are well-known, the exact chemicals and methods used in the prevention and cure are not fully established and standardised. There has been no disease or pest in an epidemic form in this division so far. The only methods known are spraying or dusting the crop with chemicals. As spraying involves the use of plenty of water and as water is scarce in these parts, hand or power spraying may not be suitable. The plantations being more or less continguous, it will be advantageous to undertake aerial spraying or dusting which will be quicker and cheaper. The best time for spraying and dusting will be January–February when the crop is flowering. The expert knowledge of the entomologists and crop-protection officers may be made use of in deciding on the chemicals, season and the method.

319. As the tract has quite a large area of cashew under private ownership, the organisation of aerial spraying annually over all the crops owned by both the Government and individuals may be of great advantage. The cost may be borne by the Government and 50 per cent of the cost may be recovered from private owners whose areas have been covered during control measures. Otherwise protecting only the departmental plantations and leaving the adjoining private plantations unprotected will not be in the interests of the departmental plantations.

320. A list of pests and diseases occurring on cashew and their control is given in Appendix IX.

321. *Soil Conservation.*--The subject is dealt with fully in the soil Conservation Working Circle.

322. *Demarcation of the boundaries.*—Each year's plantation will be demarcated by large pillars 2 metres tall on all four sides with the year of plantation number of plots and the area inscribed boldly. In addition, a belt 5 metres wide will be cleared of all growth between two such plantations in order to serve as a boundary between two plantations. If however it is definitely known that certain species in this belt harbour predators of the pests on cashew such species may be retained to serve as a biological control measure. All other species may be cut back flush with the ground. In the middle of the cleared 5 metres belt one row of plants of some useful species can be planted at a spacing of 5 metres from one another. The species suggested are Neem, Albizzia lebbeck and Pongamia glabra.

323. Each plot of 20 hectres will likewise be demarcated by stones 1 meter tall. On such stone will be planted in between two plots at either end and the number and area of each plot shown on either side of the stone. In addition, a row of Eucalyptus hybrid will be planted at an espacement of 2 metres all around each plot. Only container seedlings will be planted in August–September. The row of Eucalyptus will serve as a clear demarcation to recoginse the plots from at a distance. In addition, palmyran seed will be planted in between two Eucalyptus plants at an espacement of 3 metres. Once established, they will be permanent and cannot be easily destroyed.

324. *Re-survey of the plots.*—Areas of some of the coupes and plots were found to be incorrect. Therefore a resurvey shall be done of all the coupes and plots in the division and the correct area computed. This work will have to be done as early as possible, within the first three years of this plan period.

325. *Grazing.*—All areas where soil conservation works have been done will be closed for a period of three years or until the bunds, etc., have consolidated and the plants planted for the protection of the bunds have established, whichever is later. The newly planted areas will also be closed for a period of three years.

326. *Kumri.*—Kumri cultivation may be allowed wherever there is demand during the initial formation or at any age of the plantation especially in the gaps which are to be filled up. No kumri cultivation will extend beyond three years. There shall be a gap of two years between two such periods of kumri cultivation if done in the same area.

Experiments.

327. *Yield.*—In order to collect yield data of cashew sample plots each of ten acres will be laid over each year's plantation in all series. The collections from these sample plots will be carefully weighed and accounted during every collection.

328. (ii) *Manuring.*—Manurial trial may be conducted by the division or by the State Silviculturist for finding out the best manure or fertiliser and the exact dose to obtain maximum growth and yield.

329. (iii) *Pest and disease control.*—Trials may be conducted for finding out the most suitable chemical method, etc., for controlling the pests and diseases.

330. *Control.*—The control forms relating to this working circle are given in appendix XI. They should be posted as soon as the operations are carried out and shall be completed at the close of the financial year.

CHAPTER III—WORKING PLAN FOR THE CASUARINA WORKING CIRCLE.

SECTION 1—GENERAL CONSTITUTION.

331. This Working Circle comprises the forest areas situated in the reserves and unreserves on the coast and river margins which are already under Cusuarina.

332. The total area of the working Circle is 179.31 ha.

SECTION 2—DIVISION OF THE AREA.

333. The Working Circle is divided into the series, viz.,

(i) Portonovo series consisting of all areas near the sea-shore; and

(ii) River fringe series consisting of areas freshly planted on the river margins of Malattar and Vellar.

Name of the series.	*Name of the Range.*	*Name of the area.*	*Area in hectare.*
Portonovo	Panruti.	Ariyakoshti U.R.L.	33·19
		Portenovo U.R.L.	17·00
		Killai R.F.	44·93
		Pichavaram R. F.	11·74
		Total ..	106·86
River fringe ..	Panruti.	Thiruthuraiyur U.R.L.	32·38
	Ulundurpet.	Iruvelpet U.R.L.	10·12
	Vridhachalam.	Sathiyavadi U.R.L.	29·95
		Total ..	72·45

SECTION 3—METHOD OF TREATMENT.

334. *Silvicultural System.* The system prescribed is clear felling system following by artificial regeneration.

335. *Choice of species.—Casuarina equisetifolia* will be the only species raised as a pure crop. The species is quick growing, yields good revenue and is in good demand in the market as firewood and poles.

336. *Rotation.*—Data for fixing the rotation for casuarina in this division could not be collected for want of a complete series of age gradations of plantations. The object of management is to produce the maximum quantity of firewood per hectare in order to obtain maximum financial return. The rotation adopted in the past working plan was nine years which was subsequently reduced to eight years. The espacement was also reduced from 2.6 metres to 2 metres as the previous espacement was found to be too wide. The experiments in Marakanam research plot indicate that shorter rotation and closer espacement yield maximum volume of wood. It is therefore proposed to adopt an espacement of 2 metres × 2 metres and a rotation of seven years.

SECTION 4—FELLING AND REGENERATION.

337. The areas proposed for clearfelling will be surved and demarcated on the ground in November of the year prior to that of felling. At the time of survey the area will be divided into 5 hectares bits to encourage more bidders and the bits demarcated. The coupes will be sold in open auction early in January. The lease period will be six months from the 1st April.

338. The contractor should clearfell and uproot the growth to a depth of 0.5 meter. The growth may be removed as entire poles or billets and roots. Billets will be 0.6 meter long and stacked in 1 meter tall stacks for purposes of measuring the volume of wood. The contractor will render accounts for the number and size of the poles, volume of wood and roots removed. The area will be thoroughly levelled by the contractor to cover up the extraction pits to facilitate planting during the following year.

TABLE OF ANNUAL FELLING AND REGENERATION.

339. The river fringe series may be discontinued if the yield is not satisfactory. However, it must be realised that the stocking, growth and yield are usually poor in barren areas when casuarina is grown for the first time and in the second and the third rotations the crop improves considerably. In Malattar River bed no fresh areas need be taken till it is satisfactorily established that in the already planted areas improvement is noticed in the second rotation.

59-21—10

340. The following areas will be felled and regenerated as shown below :—

Coupe number.	Range.	Name of the land.	Area in hectares.	Year of Planting.	Year of felling.	Year of Planting.	Year of felling.	Year of planting.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			Portonovo series.					
I	Panruti	Killai R.F.	16·35	1957 and 1959	1966	1967	1974	1975
II	Do.	Do.	16·07	1957 and 1959	1967	1968	1975	1976
III	Do.	Do.	12·51	1959	1968	1969	1976	1977
IV	Do.	Ariyakoshti U.R.L.	17·00	1963	1969	1970	1977	1978
V	Do.	Do.	16·19	1963	1970	1971	1978	1979
VI	Do.	Portonovo U.R.L.	17·00	1964	1971	1972	1979	1980
VII	Do.	Pichavaram R.F.	11·74	1965	1972	1973	1980	1981
			River fringe series.					
I	Ulundurpet	Iruvelpet U.R.L.	10·12	1961	1968	1969	1976	1977
II	Panruti	Thiruthuraiyur U.R.L.	16·19	1962	1969	1970	1977	1978
III	Do.	Do.	16·19	1963	1970	1971	1978	..
IV	Vriddhachalam	Sathiyavadi	15·00	1964	1971	1972	..	..
V	Do.	Do.	14·95	1964	1972	1973	..	..
VI	Do.	Do.	15·00	1964	1973	1974	..	..
VII	Do.	Do.	15·00	1966	1974	1975	..	..

341. *Yield.*—The yield recorded from the indicator plots laid in Killai and Pichavaram areas is 33 tonnes and 40 tonnes respectively per hectare for seven years old plantations. These are plantations with about 1,500 plants per hectare at an espacement of 2.6 metre. As the espacement has been changed to 2 metres by 2 metres the number of plants will also increase to 2,500 per hectare and thus the yield is likely to increase to about 50 tonnes per hectare.

342. The river fringe series is likely to fetch a poor yield as the stocking and growth are poor.

Regeneration—Preliminary works.

343. *Ploughing.*—As soon as the contractor vacates the area, the site for planting will be tractor-ploughed in October-November. The ploughing will be criss-cross if country plough is used.

344. *Fencing.*—As casuarina is susceptible to browsing and mechanical damage by cattle, a good and strong fence should be erected before planting. Barbed wire fencing will be most suitable. If barbed wire cannot be obtained a strong brush wood fence should be erected. The fence must be 2 metre tall. The fence can be dismantled after two or three years when the seedlings are beyond demage by cattle.

345. *Collection of seeds.*—Casuarina flowers and seeds twice a year in May–June and in December–January. As the seeds retain their viability only for few months, seeds should be collected from the cones ripening in October-November for immediate use. The cones are collected when they are ripe but before dehiscence from well-grown mature trees of not less than six years old. Ripe cones are brownish in colour. The cones are dried in the sun for two days. The cones dehisce liberating the winged achenes each of which contains a seed. The achenes are minute and 700 to 760 of then weigh a gram. The seeds which are liberated on the first two days alone are considered fertile. The achenes can be considered as seeds for practical purposes as the seeds are not separated for purposes of sowing. As they are easily carried away by gusts of winds and ants, great care is necessary in protecting the seeds. They should be stored in air-tight containers with ash or an insecticide.

346. About one bag of ripe cones will give about 450 grams of dried clean seeds.

347. *Nursery.*—It requires good experience, care and skill to raise a successful nursery. As the seedlings can be transported easily without damage to long distances, it is suggested that the present nursery at Portonovo should be maintained as a central nursery of the entire division. The existing fence and wells should be maintained.

348. The beds will be 10 metre long, one metre wide and raised from the ground level by 30 centimetre to prevent water logging during the rainy season. The soil should be hoed to a depth of 0.5 metre and well mixed with sheep manure. The beds should be sown early in January 80 grams of seeds will be sown per bed, sprinkled with an insecticide and covered with a thin layer of sand. The bed will be covered completely with paddy straw or dry leaves and watered daily both in the morning and evening with a rose can. Germination takes place in about two weeks. When the germination is complete, the leaf cover is removed. Watering is continued twice a day till the seedlings are removed.

349. If any pests are noticed in the nursery, an insecticide like folidal or dialdrin may be sprayed as and when necessary. The seedlings grow to a height of about 0.5 metre, which is the optimum size, in about four to five months. A standard bed will produce about 2,000 seedlings of plantable size. Before removing the seedlings from the bed, the bed should be profusely watered. The seedlings are removed carefully by dismantling the bed and without damaging the roots. The seedlings should never be pulled out of the beds.

350 *Wells.*—In all the areas where water is available at a depth of 2 metre, wells will be dug at the rate of two for every hectare. The size of the wells will be 5 metre diameter at the top and 2.5 to 3 metres at the bottom. In all the areas where the water table is deeper than 2 metres, e.g., Malattar area where the digging and maintenance of wells are likely to be costly and trouble some hand-operated pumps will be installed instead of wells. The pumps will not only be convenient to draw water without the botheration of maintaining a well in a sandy place but also can be easily taken out and installed in another place.

351. *Planting.*—Planting will be done in June--July, after the first showers of the south-west monsoon. Even if there are no showers, the planting will be done by the end of July and the plants watered profusely. It is found that late planting results in more casualties than early planting.

352. Only healthy seedlings of 0.5 metres in height with the tip unbroken will be used, the planting done as deep as possible. The fine particles of soil adhering to the roots, should not be shaken off but planted as such as they contain the valuable nitrogen fixing mycorrhiza. The planting will be completed before the end of August.

353. *Watering.*—Watering is the most expensive item in the Casuarina plantations. The frequency and duration of watering depends upon the condition of the plantation and seasonal factors. The object of watering is not only to keep the plants alive but also to accelerate their initial growth. Watering beyond the first two years is not only costly but does not help the plant very much. So watering will be restricted to about sixteen months from the time of planting, only on non-rainy days until the setting of north-east monsoon in the second year.

354. Watering will be done twice a day for the first fifteen days after planting, once a day for the next fifteen days, on alternate days for the next one month and twice a week for the rest of the period. Watering is necessary whenever the soil is dry up to a depth of 15 centimetre and if plants are found withering.

355. Watering should be done before 10 a.m. in the morning and after 4 p.m. in the evening About 3 litres of water will be poured in each pit during every watering.

SECTION 5.—SUBSIDIARY SILVICULTURAL REGULATIONS.

356. *Replacement of casualties.*—Casualties will be replaced as and when they occur only up to the end of September in the first year as replacements beyond the first year do not generally catch up with the original plants.

357. Every effort will be made to ensure full stocking during the first year itself.

358. If, however there is need to replace in the second year, the District Forest Officer may allow a replacement of casualties in June-July in the second year but no Officer may allow a replacement of casulaties in June-July in the second year but not beyond this time.

359. *Weeding and soil working.*—This will be done during the first two years only as it is not possible to do soil working in the third year due to close espacement. Soil working and weeding will be done in the entire area instead of around every planted spot. The entire area will be hoed with mumties to a depth of about 15 centimetre and all weeds removed.

360. There will be three soil workings, two in the first year and one in the second year.

361 The first soil working will be done in August-September and the second in December-January in the first year and the third in August-September in the second year.

362. *Pruning.*—Pruning definitely benefits the plantation by enhancing the circulation of air among the saplings. So a pruning will be done in the month of September in the fourth year. The following rules will be followed for pruning :—

(i) No pruning will be done for plants less than 1 metre in height.

(ii) All plants above 1 metre in height will be pruned to one-third if its height or to a maximum of 2.5 metre from the ground level whichever is lower.

(iii) A sharp knife will be used while pruning and care should be taken not to injure the bark of the main stem. The cut will be made at about 5 centimetre from the base of the branch to be pruned.

(iv) Where there are more than one plant in a pit, the best will be retained and the rest will be cut flush with the ground.

(v) Dead stems if found will also be cut and removed.

363. Pruning will be done under the direct supervision of the Section Forester. The cut materials will be collected and heaped and sold in open auction. It is anticipated that the revenue realised will cover the cost of pruning.

364. *Grazing.*—The plantation will be closed to grazing for three years from the year of planting.

365. *Pests and diseases.*—A list of pests and diseases of Casuarina and remedies is given in Appendix IX.

366. *Removal of dead and windfallen trees.*—All dead and windfallen and otherwise damaged trees will be removed once a year, stacked and sold in open auction.

SECTION 6—OTHER REGULATIONS.

367. *Demarcation.*—The entire casuarina area will be demarcated by sowing almyrah seeds on the perphery at 3 metre intervals and Eucalyptus hybrid in between. Each coupe will be demarcated by a row of Eucalyptus hybrid at 2 metre interval and by stone slabs showing the coupe number, year of plantation and area in hectares.

368. *Protection against saline water.*—As most of the plantations are adjoining the sea shore or backwaters, the low lying portions are likely to be inundated with salt water at times. As the salt water is highly toxic to young plantations, a good bund should be erected all around the plantation especially around the low-lying areas.

369. *Statistics.*—The quantity of firewood and poles extracted by the contractor during the clearfelling of the coupes will be furnished to the Range Officer every month. These data along with the details of monthly cost of raising the plantation will be posted regularly in the Plantation Journal and ledger.

370. *Control.*—Control journal, Control forms, Plantation journal and ledger, nursery journal and ledger record of works, deviation statement and control maps will be maintained fo. the working Circle as stated in Appendix XI.

CHAPTER IV—WORKING PLAN FOR EUCALYPTUS WORKING CIRCLE.

SECTIONE—GEUERAL CONSTITUTION AND CHARACTRE OF THEIR VEGETATION.

371. *Object.*— The object of the constitution of this working Circle is to raise fast growing species and supply firewood to Madras City besides meeting the local needs. The working circle is an adaptation of the Project of Fuel Plantation for supply to Madras City prepared by Sri K. Durairaj (sanctioned in G.O. No. 2601, Food and Agriculture, dated 6th August 1962), with necessary modifications. Production of maximum amount of firewood per hectare will be the principal aim.

372. *General constitution.*—The Eucalyptus working circle comprises portions of reserved forests which have fairly deep loamy red soil. It includes areas already raised with Eucalyptus.

373. *Character of the vegetation.*—The areas chosen for regeneration carry at present a degraded type of vegetation corresponding to 6A/C1. Southern Thorn Forest, 6A/C2/DSI Southern thorn Scrub 6A/C2/DS2 Southern Euphorbia Scrub described by Champion and Seth (See Chapter II, Section 1).

SECTION 2—DIVISION OF THE AREA AND FORMATION OF SERIES.

374. The total area of the Working Circle is 3,025·07 hectares and it includes an area of 621.63 hectares already planted with hybrid Eucalyptus.

375. The working circle is divided into the following six series :—

Name of the series.	Name of the forest.	Range.	Area in hectares. Planted.	Proposed.	Total.
(1)	(2)	(3)	(4)	(5)	(6)
1 Pandur ..	Pandur U.R.L. ..	Ulundurpet ..	263·47	131·14	394·61
	Kottalamalai R.F. ..	Do. ..	..	202·34	202·34
2 Sirupakkam ..	Sirupakkam U.R.L. ..	Do. ..	182·91	236·34	419·25
	Alwarmalai R.F. ..	Do. ..	..	80·92	80·92
3 Alwarmalai East ..	Do. ..	Do. ..	95·13	398·21	493·34
4 Melpalangur ..	Kuthagudi U.R.L. ..	Do. ..	59·89	..	59·89
	Melpalamgur R.F. ..	Kallakurichi ..	20·23	384·05	404·28
5 Alwarmalai North ..	Alwarmalai R.F. ..	Ulundurpet ..	..	479·96	479·96
6 Alwarmalai South ..	Do. ..	Do. ..	..	490·48	490·48
		Total ..	621·63	2,403·44	3,025·07

Section 3—Method of treatments.

376. The treatment proposed is (i) to clearfell eplantations for firewood under simple coppice system and (ii) to convert the areas proposed into Ecualyptus plantations.

377. *Choice of species.*—The species prescribed is the Nandi Hills Provenance of *Eucalyptus tereticornis* which is commonly called the " Mysore Gum ". The species has many provenances. Though it it is indigenus to Australia *Eu-alyptus tereticornis* has been successfully cultivated in Italy, Cyprus, North Africa—particularly Morocco, Bazil, Congo, Indnesia and in many parts of India. The species exhibits varied vegetative character and therefore the Nandi Hills provenance which is planted widely in different parts of India, was for a long time considered a hybrid. It used to be called " Mysore hybrid ", " Eucalyptus hybrid ", "Eucalyptus hybrid of Mysore origin ", etc. It was Dr. Pryor of Australia who after studying the species in 1966 stated that the so-called hybrid is nothing but pure species of *Eucalyptus tereticornis* sm.

378. The species is fairly fast growing and grows in a variety of soils. However it does not fare well in soils which are very clayey or very shallow and highly alkaline soils. It is fairly drought resistant. In places with deep soil and adequate moisture, it attains very good growth. It is a light demander.

379. *Silvicultural system.*—The silvicultural system prescribed is clearfelling and regeneration by simple coppice. Wherever necessary, the coppice will be supplmented by planting. If the coppicing is not good, regeneration will be by complete replanting.

380. *Rotation.*—In the absence of definite date on growth and yield hybrid Eucalyptus, a tentative rotation of ten years is prescribed. This is, however, subject to revision. It has been found in these dry tracts that Eucalyptus begins to show signs of stagnation beyond the fifth year. Therefore there are indications to reduce the rotation to even seven years. Studies on the growth of Ecualyptus will decide the rotation.

381. *Espacement.*—Observations in the small plantation in Alwarmalai addition area indicate that an espacement of 3.35 metre (11 inches by 11 inches) is wide. As most of the areas to be planted are similar in soil depth and fertility to the Alwarmalai area, an espacement of 2 metres by 2 metres is prescribed. An ideal espacement can be found out only after one rotation.

382. —*Regulation of yield.*—Yield will be regulated by area.

Section 4—Regeneration.

383. Reneration will be done by completely clearfelling the rank growth, uprooting, adopting soil conservation measures, working the soil intensively and planting container seedlings.

384. *Preliminary operations.*—All preliminary operations like clearfelling, uprooting and soilconservation will be done *one year ahead of planting.*

385. *Clearfelling and uprooting.*—The area selected for planting will be surveyed, demarcated and clearfelled. Wherever there is demand for the standing growth, the right to clearfell uproot and remove the growth will be sold in auction. Clearfelling work will start in April and be completed by August–September. Uprooting will be done when the soil is most and completed by January-February before the soil becomes dry. Uprooting should be done throughly and carefully so that every root material is dug up and removed. Otherwise the roots produce plenty of shoots resulting in heavy regrowth which not only cost a lot to reclear but also interfere with the growth of the plantation. All cut and uprooted materials will be sold in auction when clearfelling and uprooting are done departmentally. The left over materials will be burnt.

386. Tractors can be used with advantage to clear the jungle growth supplemented by manual labour. The tractor must be of crawler type with a minimum of 120 HP with bull dozer and rooter equipment.

378. *Laay out of plots.*—To facilitate supervision, control and check-measuring of vari-operations in the plantation areas, it will be convenient if the area is divided into a number of smaller units measuring about 10 hectares each. A clear space of 5 metre width should be left all around these plots to be formed into inspection paths so that tractors, lorries and jeep can be taken conveniently to any part of the plantation. The paths will be useful as extraction paths in future and will also serve as fire-belts.

388. *Soil conservation work.*—As moisture conservation is more important in these areas than soil conservation, it is prescribed that all areas wheth plam or sloping be bunded. On level grounds, bunds of 0.5 metre in height and 1 metre broad at the base and 0.25 metre broad at the top will be erected around every hectare. On sloping grounds, the bunding and other works will be done as described in the soil conservation working Circle (Chapter IX). As this work can be done only when the soil is moist, the work should be completed by January-February. Tractors with bull dozer equipment can be used for this purpose.

NURSERY PRACTICE.

389. Eucalyptus requires very great care in the nursery stage. Certain amount of experience and skill is required to produce good seedlings. It is suggested therefore, that there should be a central nursery for each capable of producing all the seedlings required for the range. It should be provided with a well capable of yielding sufficient water around the year, a pump set, and other equipments.

390. There will be two kinds of nurseries for Eucalyptus namely (1) the bed nursery and (2) the container nursery. Both may be located in the central nursery itself. If favourable localities are available the container nurseries may be located near the plantation sites. The bed nurseries, however, should be formed only in the central nursery.

391. (1) *Bed nursery.*—The beds will be 10 metres long and one metre wide. The beds need not be raised above ground level unless there is danger of water stagnation. Before forming the beds, the area should be well ploughed with a tractor. Each bed will be lighty manure with farm yard manure. About 0.5 tonne of manure will be sufficient for each bed. Heavy doses of farm yard manure have been found to induce 'damping off' which takes a heavy toll of seedlings.

392. *Sowing.*—As often seeds of varying qualities are available, it is necessary to find out the germination per cent of each source of seed before sowing. If the seed is good, 60 grms of seeds will be sufficient for a standard bed of 10 meters by 1 mtere. As the seeds are very minute, it is necessary to mix them with some ash or sand while sowing. The seeds are usually carried away by ants and some insects damage the yound seedlings. Therefoure some insecticide shold also be mixed with the seeds while sowing.

393. The beds are covered with straw for about a week and watered profusely. As soon as germination is over, the straw cover should be removed and a light shading given for about a fortnight. Watering should be done by spraying with a rose-can or using a sprayer.

394. *Pricking out.*—The seedlings will be pricked out in polythene bags when they are 2 centimetres to 4 centimetres tall. It is desirable that the polythene bags are 25 centmetres long and 12 to 5 centimetres broad and are sufficienciently thick (200 guage).

395. Great care is necessary in the preparation of the soil for the polythene container. Sandy soils retain less moiture and promote root production and when the bag is removed during planting, the whole soil becomes loose and comes apart leaving the naked roots. On the other hand, if there is a slightly higher clay fraction in the soil, the container is able to retain moisture for longer periods, and a ball of earth remains intact when the bag is removed. The seedlings are also able to tide over an unexepected spell of drought after planting, thus improving the chances of survival.

396. The entire operation of pricking off must be done under dense shade in an area protected from winds. The seedlings should be handled by leaves and not by their week stems. They should be planted at a slightly greater depth than in the seed bed and the soil gently firmed around the roots. If the seedlings are to be carried to long distances for pricking out, they should be kept moist throughout the period of transport. They are best carried in fresh mud pots with a little water. The seedlings can be kept fresh up to even three days by this method.

397. The seedlings should be kept in shade, protected from winds and watered every morning and evening. After establishment in the bags, the overhead shade should be removed gradually. Later the seedlings are *kept in full sunlight* until they are planted out.

398. Seedlings for planting should be about 30 centimetre tall. The rate of growth of the seedlings can be controlled by watering. So if the planting time is postponed due to unexpected drought, watering shuld be reduced to a minimum so that the seedlings do not grow too tall for handling.

399. *Shifting of containers*.—After about a fortnight from the day of pricking out, it is necessary to shift the seedlings twice in a week as otherwise the roots pierce the container and reach the soil. It is suggested that a thin polythene sheet not capable of being pierced by roots may be spread under the seedlings so that shifting can be eliminated. Shifting the containers is a costly operation.

400. *Elimination of culls*.—It is not uncommon to find plants of different morphological characters and vigour in any *Eucalyptus tereticornis* plantation. Some of them are so poor that they remain stunted and bushy inspite of best conditions. It is therefore desirable to detect bad types even in the nursery and eliminate them.

401. It has been observed that only seedlings with lanceolate leaves grow into good sized trees. Seedlings with abnormally narrow leaves, unusually thick leaves or unusually broad leaves do not grow well. Such culls should be detected and eliminated at the seedling stage and need not be carried to the field for planting. Repeated observations in the nursery and field on the performance of seedlings may help to eliminate bad seedlings even at the pricking off stage. As elimination of sulle leads to shortage of seedlings (which may be about 10 per cent), it is necessary to provide for more seedlings in the nursery to compensate the loss.

402. *Transport of seedings to the field*.—While transporting seedlings from the nursery to the planting site, care should be taken to cause no damage to the containers or seedlings. If the nursery site is nearby, the containers can be packed in baskets in their natural position and carried by mazdcors. For long distances, the containers can be transported by using lorries or trailers drawn by tractors. The containers may be piled one over the other in a horizontal position or packed vertically in special crates the crates arrenged in two or more tiers according to the capacity of the trailer or truck.

PREPARATION OF THE PLANTING SITE.

403. *Ploughing*.—In the year of planting, the site must be prepared for planting by working the soil to a depth of 15 centimetres. This country ploughs merly scratch the soil and are therefore not useful. Tractors with disc ploughs are the best for ploughing in forest areas. As wheel tractors are subject to punctures, it is better to use Crawler tractors. Ploughing must be started soon after the first showers.

404. *Aligining and staking*.—The ploughed area should be aligned at 2 metres by 2 metres and staked. As ropes are subject to stretching, it is suggested that steel wires be used for alignment work. While aligning the bunds will also be included and staked along the aligned lines for planting.

405. *Pitting*.—Pits 30 centimentres by 30 centimatres by 30 centimetres will be dug at every stake after aligning and staking.

PLANTING OUT.

406. *Planting season.*—The best season for planting is between July and October. As early planting results in better stocking and growth, it is advisable to plant as early as possible during the planting season.

407. Planting should be done on a rainy day when the soil is moist enough. The seedlings should be profusely watered and taken to planting site. Before planting, the polythene container should be removed carefully ripping it open with a sharp blade and without shattering the ball of earth inside.

408. A suitable fertiliser (e.g., a 1:3 mixture of ammonium sulphate and super-phosphate) and an insecticide (e.g. Aldrin) may be sprinkled inside each pit before planting. This is just to boost up the initial growth of the seedlings and also to ward off any termite or other insect attacks. The advice of the State Siliviculturist should be sought as to the nature of fertiliser and the dosage.

409. The seedlings with a ball of earth will be planted a little deeper than the level it occupied in the container and the soil well pressed all around to remove any air pocket.

410. ***Table of annual regeneration.***—The areas will be regenerated as shown below :—

ULUNDURPET RANGE.

Year of Regeneration.	*Name of the series.*	*Name of the Forest.*	*Coupe Number.*	*Area in hectares.*
(1)	(3)	(3)	(4)	(5)
1966	Pandur	Pandur U. R. L. ..	V	66·37
	Sirupakkam	Sirupakakm U. R. L. ..	IV	46·14
	Alwarmalai East ..	Alwarmalai R. F. ..	III	48·56
	Alwarmalai North ..	Do.	I	47·36
	Alwarmalai South ..	Do.	I	47·76
			Total area ..	256·19
1967	Pandur	Pandur U. R. L. ..	VI	64·77
	Sirupakkam	Sirupakkam U· R. L. ..	V	50·18
	Alwarmalai East ..	Alwarmalai R. F. ..	IV	48·56
	Alwarmalai North ..	Do.	II	48·56
	Alwarmalai South ..	Do·	II	50·98
			Total area ..	263·04
1968	Pandur	Kottalamalai R· F. ..	VII	50·59
	Sirupakkam	Sirupakkam U· R· L. ..	VI	48·56
	Alwarmalai East ..	Alwarmalai R· F. ..	V	48.56
	Alwarmalai North ..	Do.	III	49·37
	Alwarmalai South ..	Do.	III	47·35
			Total area ..	244·43
1969	Pandur	Kottalamalai R· F· ..	VIII	50·58
	Sirupakkam	Sirupakkam U· R. L. ..	VII	43·71
	Alwarmalai East ..	Alwarmalai R. F· ..	VI	52·61
	Alwarmalai North ..	Do·	IV	49·37
	Alwarmalai South ..	Do.	IV	49·37
			Total area ..	245·64

Year of regeneration.	Name of the series.	Name of the Reserved Forest.	Coupe number.	Area in hectares.
(1)	(2)	(3)	(4)	(5)
		ULUNDURPET RANGE.		
1970	Pandur	Kottalamalai R. F. ..	IX	50·59
	Sirupakkam	Sirupakkam U.R. L. ..	VIII	47·76
	Alwarmalai East ..	Alwarmalai R. F. ..	VII	50·18
	Alwarmalai North ..	Do.	V	35·61
	Alwarmalai South ..	Do.	V	50·18
			Total area ..	234·31
1971	Pandur	Kattalamalai R. F. ..	X	50·58
	Sirupakkam	Alwarmalas R. F. ..	IX	39·65
	Alwarmalai East ..	Do.	VIII	51·80
	Alwarmalai North ..	Do.	VI	47·35
	Alwarmalai South ..	Do.	VI	47·76
			Total area ..	237·14
1972	Sirupakkam	Alwarmalai R. F. ..	X	41·27
	Alwarmalai East ..	Do.	IX	48·97
	Alwarmalai North ..	Do.	VII	48.56
	Alwarmalai South ..	Do.	VII	50·59
			Total area ..	189·39
1973	Alwarmalai East ..	Alwarmalai R.F.	X	48·97
	Alwarmalai North ..	Do.	VIII	57·46
	Alwarmalai South ..	Do.	VIII	49·37
			Total area ..	155·80
1974	Alwarmalai North ..	Alwarmalai R. F. ..	IX	47·76
	Alwarmalai South ..	Do.	IX	48·56
			Total area ..	96·32
1975	Alwarmalai North ..	Alwarmalai R.F. ..	X ..	48·56
	Alwarmalai South ..	Do.	X	48·56
			Total area ..	97·12
		KALLAKURICHI RANGE.		
1966	Melpalangur	Melpalangur	III	48·56
1967	Do.	Do.	IV	47·35
1968	Do.	Do.	V	48·56
1969	Do.	Do.	VI	47·35
1970	Do.	Do.	VII	48·56
1971	Do.	Do.	VIII	48·56
1972	Do.	Do.	IX	47·35
1973	Do.	Do.	X	47·76
			Total area ..	384·05

SECTION 5—SUBSIDIARY SILVICULTURAL REGULATIONS.

411. *Clearing the miscellaneous growth.*—Often the miscellaneous growth reasserts itself inspite of initial clearing. As Eucalyptus wil not be able to compete with this growth, it is necessary to reclear the miscellaneous growth during the first two years of the plantation. So the regrowth should be removed atleast once a year for the first two years in December.

412. *Sol working.*—In order to censerve the soil moisture and promote soil aeration, the soil should be worked through out the area to a depth of atleast 15 centimetres. Tractors can be employed for soil working using cultivators or discs as they will be far cheaper than working the soil manually. Incidentally, working the soil throughout the area will reduce termite attacks.

413. *Replacement of casualties.*—In the first year if the survival is found to be below 80 per cent the casualties will be replaced using container seedlings. It should be done before the close of the planting season.

414. There will be no necessity to replace the casualties in the second year as the refillis will be permanently dominated by the initial survivors. However, if there is large scale casualty due to very unfavourable climatic conditions, a replacement in the second year may be done.

415. If plants are found to die in patches, they should be replaced with refills will be permanetly dominated by the initial survivors. However, if there is or saline soils. Species like *Acaca ferruginea* (Parambai) and *Acucia arabica* are recommended for such patches.

SECTION 66—METHOD OF EXECUTION OF THE FELLINGS.

416. The coupes allotted for each year will be sold in public auction. Each coupe will be sub-divided into approximately 10 hectare plots and numbered. This is necessary to attract more bidders and enhance competition. The lease period will be six months. In order to guarantee supply of firewood around the year, one set of coupe will be sold in February with a lease period from the 1st April to the 30th September and another set sold in August with a lease period from the 1st October to the 31st March. The unit of sale will be a plot of 10 hectares (approximately). The District Forest Officer may, however, combine two or more plots into a unit and sell if necessary.

417. If the coups have been subdivided into plots during the time of regeneration, they should be subdivided and surveyed before the sale and the computed area adopted for sale. In such case a row of tree may be left unfelled to serve as the plot boundary.

418. The trees will be felled by using only saws. A slanting cut will be made so as to leave not more than 15 centimetres of stump from the ground level. The trees will he cut in such a way that the stump does not split nor the bark on the stump peels off. The felled trees will be sawn into billets of one metre or 0.5 metre length and stacked before removal. The size of a standard stack is 3 metres by 1.5 metres by 1 metre (4.5 m). All materials down to 15 centimetres in girth will be stacked. The subordinates concerned will keep an account of the number of stacks and poles removed and submit it to the Range Officer periodically. The brushwood may be sold by the lessee by the issue of head-load tickets at rates approved by the District Forest Officer. The contractor shall leave the area clean without leaving any brushwood or leaves.

SECTION 7—TABULAR STATEMENT OF FELLINGS.

419. The areas will be felled as shown in the following statements :—

Year of Regeneration.	Name of the series.						Year of felling.
	Pandur.	Sirupakkam.	Alwarmalai East.	Melpalangur.	Alwarmalai North.	Alwarmalai South.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
962–63	I 64·99	..	..	..	..	..	1972
1963	II 69·19	I 87·41	..	..	..	..	1973
1964	III 60·73	II 46·94	I 34·40	I 40·47	..	..	1974
1965	IV 48·56	III 48·56	II 60·73	II 29·65	..	..	1975
1966	V 66·37	IV 46·14	III 48·56	III 48·56	I 47·35	I 47·76	1976
1967	VI 64·77	V 50·18	IV 48·56	IV 47·35	II 48·56	II 50·98	1977
1968	VII 50·59	VI 48·56	V 48·56	V 48· 56	III 49·37	III 47·35	1978
1969	VIII 50·58	VII 43·71	VI 52·81	VI 47·35	IV 49·37	IV 49·37	1979
1970	IX 50·50	VIII 47·75	VII 50·18	VII 48·56	V 35·62	V 50·18	1980
1971	X 50·59	IX 39·65	VIII 51·80	VIII 48·56	VI 47·35	VI 47·76	1981
1972	..	X 41·27	IX 48·97	IX 47·35	VII 48·56	VII 50·59	1982
1973	..	..	X 48·97	X 47·75	VIII 51·46	VIII 49·37	1983
1974	..	..	..	..	IX 47·76	IX 48·56	1984
1975	..	..	..	..	X 48·56	X 48·56	1985

OTHER REGULATIONS.

420. *Termite attack.*—Termite attack is by far a very serious one in Eucalyptus plantations. They eat away the bark and roots and retard the growth of the plants. Very often plants die if the attack is severe. Therefore it is necessary to detect the termite attacks and destroy. The earthern mound at the base of the stem should be removed and a good termicide applied at the base of the tree.

421. *Grazing.*—Though animals do not browse Eucalyptus, the plants are likely to be damaged by cattle if grazing is allowed while the plants are young. Therefore it is necessary to close the plantations for the first three years or until the plantation is beyond damage whichever is later. As grass growth becomes profuse and as the grass when dry is a serious fire hazard, it is better to encourage villagers to cut and remove the grass during the period of closure.

422. *Roads.*—As already described, a net work of roads will be provided for every plantation, every 10 hectare plot surrounded by roads. The roads will be 5 metre in width. They will be only fair-weather roads.

428. *Felling series.*—Only one felling series has been constituted under this working ever there is danger of fire the plantations will be fire-traced.

424. *Plantation boards.*—Every coupe and plot shall be provided with a board to indicate the name of the series, year, number of the coupe and plot and the area in hectare. The board will be 1 metre × 0·5 metre for the coupes and half that size for the plots. They will be renewed periodically if they get damaged and maintained throughout the rotation period. Similarly coupe stones with the coupe number and area should be planted at the four corners of each plantation.

425. *Control.*—The control forms which accompany this plan should be posted soon after the close of each financial year.

CHAPTER V—WORKING PLAN FOR SANDALWOOD WORKING CIRCLE.

SECTION I—GENERAL CONSTITUTION.

426. The Sandalwood Working Circle includes all sandal areas in the reserves of Kallakurichi Range. The reserved forests covered by this working circle are Rangappanur, Parigam and Tagarai.

SECTION 2—DIVISION OF THE AREA.

427. The working circle spreads over a gross area of 6,428.65 hectares out of which the effective sandal bearing area is about 1,100 hectares.

428. *Feiling series.*—Only one felling series has been constituted under this working circle, viz.—Takarai Felling Series It spreads over the following reserved forests :—

Name of the R. F. (1)	*Gross area.* (2) hectares.
Rangappanur R. F.	1,456·97
Parigam R. F.	520·51
Tagarai R. F.	4,451·17
Total ..	6,428·65

Section 3—Analysis of the crop.

429. The sandal in this tract is widely scattered either as isolated trees or in small patches. A 10 per cent stratified random sampling was adopted and the crop in Tagarai Reserved Forest was enumerated over an area of 1191.82 hectares. The result of enumerations is given below :—

Trees (above 15 Centimetr iu oith.		*Regeneration (below 15 centimetre in girth).*		
30-45 centimetre	*15-30 Centimetare.*	*Above 2 metre height.*	*Blow 2 metre height.*	*Total.*
(1)	(2)	(3)	(4)	(5)
472	28	973	563	1,536

430. The figures show that the crop is still young as no trees over 45 centi metre were recorded. Strangely enough, there is no incidence of spike in this tract. It is likely that the area was run over spike in the past killing ali trees followed by fresh regeneration

Section 4—Method of treatment.

431. Only dead trees will be extracted. Natural regeneration will be relied upon to restock the forest with sandal. However, artificial regeneration of sandal will be taken up over a limited area of 101 hectares.

432. *Felling cycle* —As the aim is to exploit only the dead sandal, it is necessary to cover the area as frequently as possible. Further the tending of the sandal stock should be done at short intervals and such tending is contemplated only when each coupe is taken for exploitation. A felling cycle of 3 years is therefore prescribed.

433. *Division into coups.*—The felling series is divided into three annual coupes and the limits of each coupe is marked in the map accompanying this plan.

434. *Yield.*—The yield will be regulated by area. As the yield depends upon the number of dead trees available, it is not possible to forecast the yield. Further no trees were extracted in the past.

Section 5—Method of executing the fellings.

435. One coupe will be worked annually irrespective of outturn. In the event of any arrears in exploitation of the coupe prescribed for a year, the portion not worked will be taken up for exploitation during the succeeding year together with the coupe prescribed for that year.

436. *Felling.*—Only dead trees will be extracted. All dead trees in a coupe will be marked, enumerated, and uprooted for extraction of sandalwood. As the area and the availability of dead trees are limited, it is enough if the subordinates alone are employed for enumeration and marking. There will be no need to employ coolies. Marking, uprooting and extraction will be carried out departmentally as per the instructions contained in the pamphlet. "Rules regarding selection, felling, cleaning, classification and disposal nof sandalwood; and the method of maintaining depot accounts and other registers".

437. The trees will be rough cleaned in this division and transported to Tirupattur sandalwood depot for final cleaning and sale. The revenue realised will be credited to the revenue of this division.

438. **Tabular statement of fellings Kallakurichi Range, Takarai Series.**

Coupe number.	Area in hectare. Gross area.		Effective area.	Name of the R. F.
(1)	(2)	(3)	(4)	(5)
I	1456.97		..	Whole of Rangappanur and Parigam R. Fs.
II	1845.60		664.90	Takarai R. F. north of Valasai Ar.
III	2606.57		448.79	..

SECTION 6—SUBSIDARY SILBACULTURAL REGULATIONS.

439. *Tending.*—The growing stock in each coupe will be tended at the time of marking. Tending will include climber cutting and cutting of branches of other trees interfering with sandal trees and regeneration above 2 metres in height in order to relieve the sandal from suppression.

440. *Artificial regeneration of sandal.*—An area of 101.1 hectare (250 acres) in Coupe No. III is set apart for artificial regeneration. It is divided into 10 plots each of 10.11 hectare in extent. Each plot will be taken up for regeneration every year.

441. The plot will be surveyed and demarcated. The miscellaneous growth will be clearfelled and thorughly uprooted, followed by ploughing. The plot will be fenced using barbed wire or wire nets or if they are not available strong brush-wood fencing will be made out of the cut materials.

442. The best tecnnique for raising sandal is by direct sowings in prepared continuous contour strips, over which primary hosts (Calotropis gigantea is a good example) are also raised by simultaneous sowing. This technique has given good results in the north Coimbatore plateau.

443. The espacement between the 1/2 metre wide strips may be 3.5 metre. Only fresh seed should be used for sowing as sandal seeds lose their viability very fast.

444. *Cultural operations.*—No soil working will be done in the area of planting. All climbers will be cut and removed. The miscellaneous growth need not be removed. When the seedlings are over 2 metre in height, any miscellaneous growth likely to suppress the sapling will be cut back. Casualties will be replaced in the same year within the planting season.

SECTION 7—OTHER REGULATIONS.

445. *Spike.*—Any incidence of spike and its spread will be detected early and reported to the District Forest Officer. The District Forest Officer will make a special note of the locality where spike has occurred and the spread of spike in the control journal. Spike control methods if any advocated at the time will be followed to arrest spike.

446. *Grazing.*—A block of 445.15 hecters (1,100 acres) in Coupe III will be completely closed to grazing throughout the period of this plan. As cattle often browse away the young seedlings it is necessary to close the sandal areas to grazing to promote regeneration. To provide grazing facilities, it is proposed to close only a limited area and leave the rest of the area open to grazing. The effect of closure will be studied from time to time. The regeneration plots will be completely closed to grazing during the plan period.

447. *Fire.*—The entire working circle will be strictly protected from fires as fires will kill all regeneration and weaken bigger trees making them vulnerable to spike attack.

448. *Control.*—The control forms for this working circle, which accompany this plan, should be posted at the close of each financial year.

CHAPTER VI—WORKING PLAN FOR REHABILITATION WORKING CIRCLE.

SECTION I—GENERAL CONSTITUTION.

449. This working circle will include portions of ex-panchayat forests with adequate depth of soil capable of being improved by planting suitable species and also the areas that have been regenerated under the intensive technique.

SECTION 2—DIVISION OF THE AREA.

450. *Area of the Working Circle.*—The area of the working circle is 1,578.23 hectares including an area of 328.18 hectares already regenerated.

451. *Formation of series.*—The area proposed to be regenerated is formed into three regeneration series all located in Ulundurpet Range as shown below—

Name of the series.	*Name of the Forest.*	*Area in Hectares.*
Veppur	Kattayanallur U.R.L.	122·61
	Kattumailur R. F.	84·98
	Kuthagudi U. R. L.	203·95
Krishnapuram East	Krishnapuram R.F. (in part) ..	407·51
Krishnapuram West	Do.	206 81
	Thottapadi	224·20
	Total ..	1,250·05

452. The following areas have already been planted.

Year of regeneration.	*Name of the Forest.*	*Area in hectares.*
1963	Kattayanallur U. R. L.	42·49
	Kattumailur R.F.	20·64
	Krishnapuram R.F. (East)	40·47
	Kottalamalai R.F.	20·63
	Melpalangur R.F.	40·47
	Krishnapuram R.F. (West)	41·27
1964	Kattumailur R.F.	8·09
	Melpalangur R.F.	20·23
	Krishnapuram R.F. (West)	23·07
	Krishnapuram R.F. (East)	30·35
1965	Krishnapuram R.F. (West) .. .. (2·83 hectares of pure tamarind.)	44·90

SECTION 3—METHOD OF TREATMENT.

453. The object of management is to convert the degraded forests into better type of fuel *cum* timber forest within the plan period by planting suitable species. It is proposed to mix Eucalyptus to the extent of 50 per cent and exploit the species for fuel in 10 years.

454. *Choice of species.*—Tree species that are indigenous to the locality, that are valuable as firewood and small timber and that can be grown easily will be planted. The species prescribed are *Acacia ferruginea* (parambai), *Acacia arabica*, *Albizzia lebbeck*, *Tammarindus indica*, *Pongamia glabra*, *Azadirachta indica*, *Bassia latifolia*, *Hardwickia binata*, *Santalum album* and *hybrid Eucalyptus*. Other species if found suitable may also be used.

455. *Silvicultural system.*—Silvicultural system prescribed is clearfelling followed by planting.

456. *Rotation.*—A tentative rotation of 30 years is prescribed. An espacement of 2 metre by 2 metre is prescribed.

Section 4—Method of Regeneration.

Table of annual regeneration—Ulundurpet Range.

Year.	Coupe Number.	Name of the Forest.	Area in Hectares.
		I. Veppur Series.	
1966	I	Kattayanallur U. R. L.	40·47
1967	II	Do.	41·27
1968	III	Do.	40·87
1969	IV	Kattamailur R.F.	40·87
1970	V	Do.	44·11
1971	VI	Kathagudi U. R. L.	41·27
1972	VII	Do.	40·47
1973	VIII	Do.	40·47
1974	IX	Do.	41·27
1975	X	Do.	40·47
		Total ..	411·54
		II. Krishnapuram East Series.	
1966	I	Krishnapuram R.F. (Eastern portion) ..	40·87
1967	II	Do.	40·47
1968	III	Do.	41·68
1969	IV	Do.	40·06
1970	V	Do.	40·47
1971	VI	Do.	42·09
1972	VII	Do.	41·27
1973	VIII	Do.	40·47
1974	IX	Do.	40·47
1975	X	Do.	39·66
		Total ..	407·51
		III. Krishnapuram West Series.	
1966	I	Krishnapuram R.F. (Western portion) ..	42·49
1967	II	Do.	42·90
1968	III	Do.	40·47
1969	IV	Do.	40·47
1970	V	Do.	40·47
1971	VI	Thottapadi R.F.	44·92
1972	VII	Do.	44·92
1973	VIII	Do.	44·52
1974	IX	Do.	44·92
1975	X	Do.	44·92
		Total ..	431·00

458. *Technique of regeneration.*—Regeneration will be by the intensive technique which involves complete clearance of jungle by felling and uprootal. All preliminary operations like survey clear-felling, uprootal and soil conservation works will be undertaken one year ahead of planting.

459. *(a Preliminary operations.*—The preliminary operations will be taken up one year ahead of planting beginning from April. After survey and demarcation the area will be clearfelled. Wherever there is demand for the standing growth, the right to clearfell and remove the growth will be sold in auction. The clearfelling work should be over by July—August. Uprooting will be done to a depth of 30 centmetres when the soil is moist enough and should be completed by the end of December after which the soil becomes dry.

456. Soil conservation works which involve earth work will be carried out simultaneously with uprooting work when the soil is moist. Soil conservation will be taken up only in parts of the platation area which are likely to be eroded. The detailed techques are described in the chapter on Soil Conservation.

461. *Ploughing.*—In the year of planting, ploughing the area will be undertaken early in the year after rains. Tractor ploughing is the best. If tractors are not available, the area should be ploughed in a criss-cross way, using country ploughs. Ploughing should be over by July—August.

462. (*c*) *Aligning and staking.*—After ploughing the area will be aligned using wire ropes and stakes put at 2 metres by 2 metres.

463. (*d*) The aligned spots will be pitted, each pit measuring 30 centimetre by 30 centimetre by 30 centimetre.

464. (*e*) *Planting.*—Only contained seedlings will be used for planting. The seedlings will be profuse watered before planting and taken to the planting site. Planting should be done only on rainy days. The planting season for these areas is between August and October. The polythene container will be carefully removed leaving the ball of earth around the roots in tact. The seedling will be put in the pit, pit refilled and pressed well.

465. While planting it is necessary to follow a definite pattern of mixture of species to avoid clustering a single species in one spot. The number of spots per hectare will work out to 2,500. Out of this half the number i.e. 1,250 will be Eucalyptus and the rest miscellaneous species. If for example five species are used, equal number of seedling should be raised for each species i.e. 250 seedlings of each species.

466. The species will be so planted that no two plants of one species are adjacent to each other either in the same row or diagonally and to ensure that each spaces is properly speced. The following method is suggested :—

(1) Eucalyptus will be planted at ever yalternate pit in each row. So every alternate diagonal line will have Eucalyptus.

(2) The miscellaneous species will be arranged in a sequence (e.g.) alphabetical, and planted in a line alternating with the Eucalyptus.

(3) Starting from any plant and going diagonally at an obtuse angle to the sequence of species, the same sequence is repeated. If 5 species are to be planted, they should be arranged in a sequence say, A, B, C, D and E the following diagram will explain the method : –

SEQUENCE OF SPECIES.

..	..	E	..	A	..	B	..	C	..	D	..	E
..	A	..	B	..	C	..	D	..	E	..	A	..
..	..	C	..	D	..	E	..	A	..	B	..	D
..	D	..	E	.	A	..	B	..	C	.	D	..
B	..	A	..	B	..	C	..	D	..	E	..	..

467. The object of this mixture is to prevent large gaps in the plantation which might result when a particular species or two fail due to some reason or the other. Once the sequence of species is set in one espacement line and one diagonal line, it is easy to fill up the rest of the pits by repeating the sequence.

SECTION 5—SUBSIDIARY SILVICULTURAL REGULATIONS.

468. *Replacement of Casualties.*—Casualties will be replaced within one month of planting. In any case no replacement will be done beyond the planting season. Only container seedlings will be used. No replacement will be done beyond the first year unless there is large scale mortality due to unfavourable climatic conditions.

469. *Soil working.*—The whole plantation will be soil-wored either manually or using tractors in the month of December during the first two years. All intervening jungle growth and climbers will be removed before working the soil.

470. *Nurseries.*—Seedling may be raised either in a central nursery or in temporary nurseries. Polythene bags will be used as containers. The Eucalyptus seedlings will be raised as described in the Eucalyptus working circle and sandal sheedlings as described in the sandalwood working circle. For the rest of the species, seeds will be sown directly in the containers and watered. The sedlings for planting should be atleast 8 months old.

SECTION 6—OTHER REGULATIONS.

471. *Fencing.*—As most of the species recommended are readily browsed by cattle, it is prescribed that all the plantations should be fenced for the first five years. Barbed wire or wire-nets will be used for fencing. If they are not available thorn fencing will be resorted to.

472. *Grazing.*—The regeneration area will be closed to grazing for a period of five years or until the plants have growth beyond damage by cattle which ever is latter.

473. *Plot mazdoor.*—Every plot must have a plot mazdoor engaged for the first few years to look after the plantations. He must keep the fences and bunds repaired and attend to all tending operations.

474. *Plantation boards and stones.*—Every plantation will be provided with boards showing the year of formation, coupe number and area in hectares at all approach roads. Stone slabs will also be planted on all four corners of the plantations with necessary information inscribed.

475. *Control.*—The control journal prescribed will be posted at the close of every financial year.

CHAPTER VII—WORKING PLAN FOR THE MINOR FOREST PRODUCE WORKING CIRCLE.

SECTION 1—GENERAL CONSTITUTION OF THE WORKING CIRCLE.

476. This working circle will cover all the reserved forests and unreserved lands of this division under the control of the forest department except the areas covered by the Cashew Working Circle.

477. *Kinds of produce.*—The following kinds of minor forest produce are collected in this division :—

	Name of produce. (1)	*Botanical name of the plant.* (2)	*Part of the Plant.* (3)
1	Tamarind	*Tamarindus indica*	Fruit.
2	Wood apple	*Feronia elephantum*	Do.
3	Sara parupu	*Buchanania latifolia*	Do.
4	Nellikai	*Phyllanthus emblica*	Do.
5	Elandi	*Zizyphus jujuba*	Do.
6	Nagai	*Eugenia jambolana*	Do.
7	Neem	*Azadirachtaindica*	Do.
8	Palmyrah	*Borassus fla bellifer*	Fruit and leaves.
9	Etti	*Strychnos nuxvomica*	Do.
10	Kalakai	*Carissa spinarum*	Do.
11	Coconut	*Cocos nucifera*	Fruits and leaves
12	Cashew	*Anacadium occidentale*	Fruits.
13	Broom stick	*Andropogon spp*	Stem.
14	Honey and Wax.		

478. There is not much demand in this division for may these produce except tamarind.

Section 2—Method of treatment.

479. The right to collect the minor produce will be sold in auction every year in May. The lease period will be from 1st July to 30th June. The existing system of exploitation through contractors will continue. Each range will form a unit of sale except the coconut tope in Kille Reserved Forest which will be sold as a separate unit. Where there is an exclusive demand for a particular produce or a set of produce, the District Forest Officer may sell that as a separate item, the range or a reserved, or unreserved forest being the unit of sale for that produce or set of produces. These species will be excluded from the general Minor Forest Produce lease for each range.

Section 3—Subsidiary Silvicultural Regulations.

480. The coconut tope in Kille Reserved Forest looks so unhealthy and produces so few nuts that there has been no demand for the tope in the past. To make it productive it is necessary to resort to manuring. Trenches .5 metre broad and .5 metre deep should be dug inside the plantation and suitable manures applied in the trenches. As fish is available in plenty nearby, fish meal can be applied in December for the first two yeras. The agricultural offifficers may be consulted for the proper manure, dosage and method of application that is in vogue at the time.

481. If bidders come forward. the tope may be leased out for a period of 5 years during which period the lessee will undertake all operation to improve the condition of the trees in the tope.

Section 4—Other regulation.

482. *Statistics.*—The contractors will furnish monthly accounts of minor produce collections made by them to the range officer concerned.

483. *Control.*—The control forms given in the appendix will be posted at the close of every financial year.

CHAPTER VIII—WORKING PLAN FOR THE GRAZING WORKING CIRCLE.

Section 1—General constitution.

444. This will be a overlapping working circle extending over all the reserved and unreserved forests of this division except the areas which may be closed to grazing for certain period for certain specific reasons by the District Forest Officer.

Section 2—Method of Treatment.

485. Grazing will be regulated by annual permits issued by the department subject to the conditions then in force. The grading fees for the various kinds of animals are given below :—

Description of animals.	*Rate per head.*
(1)	(2)
	RS. P.
Buffaloe	1 00
Cow	0 50
Sheep	0 25

486. The above grazing fees will be uniform for all the forests in this division. The grazing year will be from 1st July to 30th June of the following year.

SECTION 3—OTHER REGULATIONS.

487. *Areas closed to grazing.*—The areas closed to grazing will be notified annually by the District Forest Officer in the local District Gazette.

The following areas will be closed to grazing :—

(i) all regeneration areas, during the prescribed period of closure, experimental areas and similar areas.

(ii) areas which the District Forest Officer may temporarily close as punitive measure for unauthorised burning

(iii) areas closed for any other purpose or valid reasons.

488. *Goats.*—Goats will be strictly prohibited from entering any forest area.

489. *Control.*—The control forms accompanying this plan should be posted at the close of every financial year.

CHAPTER IX—WORKING PLAN FOR THE SOIL CONSERVATION WORKING CIRCLE.

SECTION 1—GENERAL CONSTITUTION.

490 This will be a overlapping working circle covering the area under cashew, Eucalyptus and rehabilitation working circles. The object of the working circle is to provide soil conservation measures to all plantations where there is danger of soil erosion and in order to promote soil moisture.

SECTION 2—AREA AND ITS DISTRIBUTION.

491. The area prescribed under this working circle is 10,000 hectares as shows below :—

Name of the Working Circle.	*Area in hectares.*
(1)	(2)
Cashew	6,017
Eucalyptus	3,031
Rehabilitation	1,250
	11,298

SECTION 3—ANALYSIS OF THE AREA.

492. The areas requiring soil conservation are of different types. They can be broadly divided into two categories., viz., A and B.

The topography, soil, precipitation, etc., under each category are described in detail in the following paragraphs :—

493. *Category A.*—This is confined to the Caper Hill areas with deep red soil, pebbles and lateritic patches. The entire terrain is a flat or gently sloping ground the slopes ranging from 0 to 5 percent. The outer fringes facing Gadilam river are fairly steep, even precipitpns sometimes. The area receives an annual rainfall of over 1,000 millimetre with maximum rainfall in 24 hours varying 196 millimetre to 275 millimetre.

Locality : Kangiruppu Bit I and II, Semakottai, Narimanam, Ammeri, Velangulam, Kallamedu and Kuttady Reserved Forests.

Crop : Cashew.

Soil : Red, very deep, sometimes mixed with pebbles and laterite.

Annual rainfall : Over 1,000 millimetre, up to 1,289 millimetre.

Maximum rainfall in 24 hours : 196 millimetre to 275 millimetre.

Slope : 0 to 5 per cent rarely over 5 per cent sometimes precipitous at the fringes facing Gadilam river.

Type of erosion : The erosion is generally moderate to serve sheet erosion throughout but at the fringes very deep gullies have formed cutting into the forest area year after year and damaging cultivated bunds below.

494 *Category B.*—

Locality : The interior plains covering Pandur, Sirupakkam, Alwarmalai, Krishnapuram and Kattumailur and Melpalanglur and Kottalamalai Reserved Forests.

Crop : Eucalyptus hybrid and miscellaneous species.

Soil : Light red soil, shallow often 15 centimetre to 30 centimetre in depth with underlying narrow or kankar pans.

Annual Raifall : Less than 1,000 millimetre down to 74 millimetre.

Maximum rainfall in 24 hours : 150 millimetre to 275 millimetre.

slope : 0 to 3 percent, very rarely 4 percent.

Erosion : Mostly moderate to serve sheet erosion, gully erosin rare.

SECTION 4—METHOD OF TREATMENT.

495. The method of treatment will be aimed at arresting soil erosion and run off and promote soil moisture. It will consist of bunding and gully plugging. Preference will be given to the cashew areas which will be covered within the first 5 years. At the same time soil conservation works will be done in all proposed regeneration areas one year ahead of planting. The entire area proposed under this working circle will be covered with in the period of this plan.

BUNDING.

496. *Size of bunds.*—The vertical interval is determined by the following formula :—

for areas with less than 1,000 milli metre rainfall $=VI=6+S\times 15$

for areas with less than 1,000 milli metre rainfall $=VI=2+S60+S\times 7\cdot 5$
—
4

where S=percentage of slope.

497. The horizontal interval is obtained from the formula HI=VI percentage of slope.

The vertical and horizontal intervals for the different slopes is given in the following table;

Percentage of slope.	*Areas below 1.000 milli metre rainfall (Category B)*		*Areas above 1,000 milli metre rainfall (category A)*	
	V Interval metre.	*H Interval metre.*	*V Interval metre.*	*H Interval metre.*
(1)	(2)	(3)	(4)	(5)
1	0·75	75	0·675	67·5
2	0·90	45	0.75	37·5
3	1·05	35	0·825	27·5
4	1·20	30	0·90	22·5
5	1·35	27	0·975	19·5
6	1·50	25	1·05	17·5
7	1·65	23·5	1·125	16
8	1·80	22·5	1·2	15

498. The height of the bund is calculated by the formula—

$$H = \frac{LRS}{5} + F \quad \text{Where}$$

H=ht. of the bund in centi metre

L=horizontal interval

R=maximum rainfall in milli metre in 24 hours

S=percentage of slope and

F=free board, usually 30 centi metres or less according to local need

499. The maximum rainfall in 24 hours recorded in the two categories of areas are :—

Category A 216 millimetres.

Category B 217 millimetres.

500. The vertical interval, horizantal interval and height of the bund calculated for each category of land are given in the following table:—

Percentage of slope.	A Category Above 1,000 millimetre rainfall annual.			Category B Below millimetre annual rainfall.		
	Vertical interval in metre.	*Horizantal interval in metre.*	*Ht. of bund metre.*	*Vertical interval.*	*Horizantal interval.*	*Ht. of bund.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	0·675	67·5	0·54	0·75	75	0·64
2	0·75	37·5	0·57	0·90	45	0·70
3	0·825	27·5	0·60	1·05	35	0·76
4	0·90	22·5	0·62	1·20	30	0·81
5	0·975	19·5	0·655	1·35	27	0·86
6	1·05	17·5	0·67	1·50	25	0·91
7	1·125	16·0	0·69	1·65	23·5	0·95
8	1·20	15·0	0·72	1·72	22·5	1·00

(the height of bund given does not include free board)

501. It may not be practicable to vary the height of the bund as well as the horizontal interval at every change of slope. Therefore the slopes are grouped under the following 3 recognisable groups and the heights of bunds given for each group :—

Slope per cent.	*Category A*		*Category B*	
	Hl.	*Ht. of bund metre.*	*Hl.*	*Ht. of bund metre.*
1 to 2	50	0·60	50	0·70
3 to 5	20	0·70	30	0·90
5 to 6	15	0·75	20	1·00

502. *Cross section of the bunds.*—The bund should be made in such a way that the bund slope should not exceed the natural angle of repose of the soil which is 1.25 :1 for red soil groups. The bund will be conical in shape.

Width of the base of the bund=height of the bund x 1.25 x 2.

503. The basal width for each height and the area of the cross section will be as shown below :—

Ht. of the bund metre.	*Basal width metre.*	*Area of the cross section metre.*
(1)	(2)	(3)
0·60	1·50	0·45
0·65	1·65	0·57
0 70	1·75	0·61
0 75	2·00	0·75
0·90	2·25	1·00
1·00	2·50	1·25

504. *Length of the bunds.*—The maximum permissible length of each bund is 300 metres. If this length has to be exceeded, lateral bunds at right angles to the contour should be built at least 30 centimetres above the contour.

505. *Waste-weirs.*—To allow the escape of the excess water, waste-weirs should be provided at salient points on the bund. A minimum width of 1.2 metres should be provided for the first 8 hectares. For every subsequent 8 hectares an increase of 30 centimetres should be allowed, the maximum being 2.2. The height of the waste-weir may vary according to the height of the bund. A maximum height of 30 centimetres be allowed and thus the height of the waste-weir will be height of the bund less 30 centimetres.

506. If the height of the waste-weir is 30 centimetres the base should be about 1.2 metres.

If 60 centimetres	...	...	2 metres.
It 90 centimetres	...	...	2.7 metres.

The waste-weir should be provided with a good packing of stones and rubbles on either side. The spillway should be padded with grass sods. Masonry waste-weirs are costly and serve the same purpose as grass waste-weir and therefore are unnecessary.

507. *Alignment, staking and construction of bunds.*—Bunding work should be done from the top-most point downwards. If due to certain reasons the top portions are not to be afforested and bunded, the top-most bund should be made sufficiently large so as to intercept the water from above and pass it down safely. It is better to make it a graded bund with a grade of 0.2 per cent and divert the water to a safe place.

508. After clearfelling, the area to be bounded should be first of all divided into 3 grades according to slope, viz., 1 per cent to 2 per cent, 3 per cent to 5 per cent and above 5 percent. There are practically no areas with slopes exceeding 5 per cent. Abney level can be used for bunding the slopes.

509. Aligning can be done with a Dumpy level, ghat tracer or Abney level. Stakes should be set at 15 metre intervals. The width of the bund should be marked on the ground with the staked points forming the central line of the bund.

510. While making the bunds the burrow pits should be 3 metres above the toe of bund so as to prevent any slipping of the bund if the burrow pit is nearby. As failure of any bund will result in the failure of the chain of bunds lower down, great care is necessary at every stage of bunding like levelling, staking, making, providing waste-weirs, etc.

511. Crawler type tractors with 100 h.p. or more fitted with angle dozers can be used to form bunds. The work will be faster and comparatively cheaper.

512. *Ploughing methods and forming smaller bunds.*—In addition to the bunds described in the preceding paragraph it is necessary to direct all other operations towards maximum conservation of soil and moisture. All ploughings should be done strictly along the contour. Soil working if done with the help of tractors should also preferably be done along the contours as the ploughs leave small ridges and furrows.

513. While ploughing, it is possible to make small bunds on the contour by running the tractor suitably. After running the tractor, with a disc plough assembly set to one extreme side, along the contour, the tractor can be made to run in the opposite direction at about 1 metre distance from the plough line to make small bunds of about 20 centimetres to 30 centimetres in height.

514. Wherever the land is sloping uniformly, it will be a good practice to align the planting lines along the contour so that when tractors are used for soil working they can be made to plough along the contours.

Gully control.

515. Gullies are divided into (1) channel gullies and (2) water-fall gullies. Both kinds occur in the cashew areas of this division especially at the outer fringes facing the Gadilam catchment. There are gullies which are more than 10 metres in depth. Channel gullies occur elsewhere in other forests also. Though the large-scale bunding in all regeneration areas are likely to retard the activities of gullies largely, yet certain amount control work has to be done.

516. Gullies, drainage are, and the slopes are drived into 3 kinds each :—

Gullies—

Small gully : less than 1 metre in depth.

Medium gully · 1 metre to 5 metres in depth.

Large gully . Over 5 metres in depth.

Drainage area—

Small drainage area 2 hectares or less.

Medium drainage area 2 hectares to 20 hectares.

Large drainage area over 20 hectares.

Slopes--

Slight : 0 to 5 per cent slope.

Rolling or medium : 5 to 10 per cent slope.

Hilly or steep : Over 10 per cent slope.

517. As there will be 27 different kinds of gullies and each kind requires definte treatment, it is not possible to describe all methods of gully control. Reference may be made to any standard book on soil conservation practices. The following methods of handling runoff are important in gully controol :—

(1) Retention of rainfall on watershed.

(2) Diversion of runoff from the gully.

(3) Safe conveyance of runoff through the gully.

518. Gullies should be controlled at the head to check the extension of the gullies. Soil conservation works like bunding should be taken up far above the gullies to reduce the run-off. These have been fully described in the earlier paragraphs of this Chapter. Then the runoff should be slowed down by constructing check-dams in the case of channel gullies. The check-dams are better constructed with brushwood and or stones. Masonry structures should be built only if they are absolutely necessary. Check spill-way or flume with grass, side spillway dams, dropinlet dams and other soil saving structures may be built wherever necessary.

SECTION 5—SUBSIDIARY REGULATIONS.

519. *Consolidation of bunds.*—The bunds should be consolidated by planting suitable species all along the bunds. The species should be capable of growing fast to cover and hold the bund, not browsed by animals and should also be some use as manure leaf and yielding minor produce. A few species are suggested below but any other species more suitable may also be preferred :—

Vitex negundo cuttings 0.5 metre in long.

Glyricidia maculata cutting 0.5 metre in long.

Arundo donax slips cutting 0.5 metre in long.

Murraya koenigii seedlings 0.5 metre in long.

Ipomoea pas-capra cutting 0.5 metre in long.

Ageva species and *Aloe* species bulbils.

The espacement suggested is 1 metre × 1 metre. The species may be planted either mixed or pure. The planting should be done during the planting season along with the main plantation or preferably earlier if possible.

520. *Repairs.*—The bunds should be carefully observed from time to time and any damage repaired then and there. The bunds should be inspected after the first heavy rains and weak points and breaches if any should be attended to immediately.

521. *Prevention of cattle.*—The grazing cattle will damage the bunds and the damage will be more especially before the bunds are consolidated. The cattle have a tendency to prefer one particular path and therefore such places should be sufficiently strengthened. It is suggested that cattle should be prevented from entering a bunded area for the first 2 years. Though in fresh regneration areas, there will be provisions to prohibit the cattle for the first few years, this extra provision is made to cover the areas where soil conservation works are undertaken long after planting, e.g., the old cashew areas.

522. *Control.*—The control forms concerning this working circle given in Appendix XI will be posted every year.

CHAPTER X—MISCELLANEOUS REGULATIONS.

SECTION 1—FARM FORESTRY.

523. Farm Forestry is one of the Five-Year Plan schemes envisaged to bring the benefits of forests to the villages by meeting at least partially the requirements of the villagers in respect of small timber, firewood, manure leaves, fodder, etc. This is an extension scheme completely planned and executed by the Forest Department. The public waste lands outside the reserved forests which are capable of supporting reasonably good vegetation are planted with useful species. Twenty to forty hectares of land are planted every year by the department subject to the availability of funds. Therefore no annual area can be fixed under this scheme.

524. Most of the lands for farm forestry are owned by individual panchayats and therefore it is necessary to obtain the concurrence of the concerned panchayat before any planting is contemplated. In as much as no definite decision has been taken regarding the future management of the plantations raised under this scheme, it is assumed that the management will be under the control of the Forest Department and the following prescriptions are made accordingly.

525. *General constitution.*—This scheme will extend over all the available waste lands such as lake fore-shore, grazing grounds and uncultivable wastes which are outside the reserved forests but belong to individual panchayats or Revenue Department. The scheme will cover the area already planted and the areas suggested for the future (*see* Appendix VI for a list of acres already planted).

526. *Division of the area.*—There are 18 panchayat unions within the jurisdiction of Cuddalore South division, each panchayat union can be considered a series for purposes of regeneration and felling programmes. Out of the 18, one panchayat union, *viz.*, the Porto Novo Panchayat Union has no area for planting and therefore only 17 unions will be covered by farm forestry.

527. *Analysis of the crop.*—No detailed study of the individual plantations has been made. However on a general study, it is found that the plantations vary from one another in stocking and growth. Most of the plantations raised so far are located only in lake foreshores and beds. The stocking and growth of plantations vary not only from place to place but also within one and the same plantation. Babul is the main species planted in the bulk of the localities. It comes up well in areas which are water logged for sometime in the year and shows particular preference to deep clayey soils which are available at a moderate level in all lakes. All highly alkaline soils are unsuitable for Babul.

528. A small area in Komaratchi Panchayat Union has been planted with casurina in Coloroom banks. The casuarina is promising.

529. *Method of treatment.*—It is suggested that the areas suggested for plantation may be planted at the rate of 20 hectares in each panchayat union annually. As the area to be tackled depends upon and funds available the target will be affected by the availability of funds. However as it will not be economic to raise and look after plantations below 20 hectares in extent, it is preferable to concentrate on a few panchayat unions instead of distributing the target equally in all unions, if the general target is reduced. If on the other hand the target is increased, the excess may be distributed in such panchayat unions where large areas are available and where the conditions for plantations are most favourable.

530. The plantations will be exploited when they are silviculturally mature.

531. The species which are most useful to the villagers in respect of small timber, firewood, fodder and manure leaf are suggested below against the most suitable localities :—

I. Lakes—

A. Moderate to good loam clay or silt—

(1) Foreshore which is above the maximum flood level—

Acacia ferruginea.
Glyricidia maculata.
Delonix elata.
Tamarindus indica.
Pithecolobium dulce.

(2) Lake bed which gets submerged for a short time in the year—

Acacia arabica.

(3) Lake bed which is under water for most of the months of the year—

No planting should be done.

(4) Lake bunds—

Tamarindus indica, Pongamia glabra;
Bambusa arundinacea; and
Pithecolobium dulce, Delonix elata
Vitex negundo.

B. Strongly alkaline or saline soils with efflorescence of salts.—*Prosopis juliflora.*

II. Grazing grounds—

A. Good and deep soil—*Eucalyptus tereticornis* (Mysore Gun)

B. Poor and shallow soil—*Acacia ferruginia Delonix elata*

C. Kallar soils—*Prosopis juliflora*

III. Canal fringes—*Pongamia glabra, Bambusa arundinacea Vitex negundo*

IV. Rivers—A bunds—*Bambusa arundinacea*

Dalbergia sissoo

Pongamia glabra,

Vitex negundo

B. Bed with deep fertile soil (Padugais)—

Bambusa arundinacea

Dalbergia sissoo

Casuarina equisetifolia

Eucalyptus tereticornis (Mysore Gum)

Pithecolobium dulce

V. All fringes of lakes and plantation margins—

Borassus flabellifer

Agaves

532. *Espacements*—

Acacia arabica and miscellaneous species	..	3.5 m. × 3.5 m.
Bambusa	..	5 m. × 5 m.
Glyricidia and Eucalyptus Casuarina	..	2 m. × 2 m.

533. The following tentative rotations are suggested for different species:—

Casuarina	... ...	7 years
Bamboo and green manure species 3-year felling or lopping cycle		
Babul and Eucalyptus	... ...	10 years
Miscellaneous species	... ...	No rotations

534. *Yield.*—The yield will be regulated by area. The yield for casuarina and babul may vary from 20 to 50 per hectare and the average may work out to about 25 per hectare. However, there will be great variation from place to place.

535. *Method of executing fellings.*—The right to fell the growth or lop for manure leaves will be sold in auction. The lease period will be a maximum of six months for fuel coupes. The District Forest Officer may fix shorter lease period for bamboos and manure leaves. The necessary conditions of sale and the methods of removals should be incorporated in the sale notice The rules for felling bamboos will be the same as followed elsewhere in the department. Only *Glyricidia Vitex and Delonix* will be allowed to be lopped for manure leaf. They may be lopped yearly during the season of demand.

536. TABULAR STATEMENT OF REGENERATION IN FARM FORESTRY.

FARM FORESTRY PROPOSED AREAS.

Serial number.	Village number.	Name of village	Total available area in hectares.	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	Total.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
		I. Kallakurichy Panchayat Union.												
1	168	Ariaperumanur ..	46	20·00	20·00	.	..	..	..	..	..	..	..	40·00
2	244	Kallakurichy ..	45	..	..	20·00	20·00	..	..	..	.	.	..	40·00
3	146	Neelamangalam ..	40	..	..	..	..	20·00	20·00	..	..	..	..	40·00
4	155	Paramanatham ..	43	..	..	..	..	..	..	20·00	20·00	..	..	40·00
5	160	Siruvangur ..	84	..	..	..	..	..	..	..	..	20·00	20·00	40·00
		Total ..	258	20·00	20·00	20·00	20·00	20·00	20·00	20·00	20·00	20·00	20·00	200·00
		II. Chinnasalem Panchayat Union.												
1	188	Nallathur ..	39	20·00	..	..	..	..	..	..	..	..	..	20·00
2	192	Paithanthurai ..	36	..	20·00	..	..	..	..	..	..	..	..	20·00
3	193	Thottiam	32	..	..	20·00	..	..	..	..	..	..	..	20·00
4	243	Sadayampattu ..	32	..	..	..	20·00	..	..	..	..	..	..	20·00
5	184	Vadakkanandal ..	38	..	..	..	..	20·00	..	..	..	..	..	20·00
6	271	Krishnapuram ..	39	..	..	..	..	..	20·00	20·00	..	..	..	40·00
7	224	Nainarpalayam ..	40	..	..	..	..	..	..	..	20·00	20·00	..	40·00
8	228	Thansiruvalur ..	48	..	..	..	..	..	..	..	..	..	20·00	20·00
		Total ..	304	20·00	20·00	20·00	20·00	20·00	20·00	20·00	20·00	20·00	20·00	200·00

		III. Sankarapuram Panchayat Union.												
1	72	Manjaputhur ..	60	20·00	20·00	20·00	..	..	..	..	..	..	..	60·00
2	173	Melapattu ..	70	..	..	..	20·00	20·00	20·0	..	..	..	..	60·00
3	35	Nedumanur ..	90	..	..	..	..	..	..	20·00	20·00	20·00	20·00	80·00
		Total ..	220	20·00	20·00	20·00	20·00	20·00	20·00	20·00	20·00	20·00	20·00	200·00
		IV. Thiyagadurgam Panchayat Union.												
1	130	Mudianur ..	28	20·00	..	..	..	..	..	..	..	..	..	20·00
2	134	Nagalur	40	..	20·00	20 00	..	..	..	..	..	..	..	40·00
3	151	Vengavadi ..	36	..	..	..	20·00	..	..	..	..	..	..	20·00
4	138	Prithivimangalam	98	..	..	..	..	20·00	20·00	20·00	20·00	..	..	80·00
5	118	Kudianallur ..	50	..	..	..	..	..	..	..	..	20·00	20·00	40·00
		Total ..	252	20·00	20·00	20·00	20·00	20·00	20·00	20·00	20·00	20·00	20·00	200 00
		V. Ulundurpet Panchayat Union.												
1	245	Ulundurpet ..	32	20·00	..	..	..	..	..	..	..	..	..	20·00
2	145	Asanur	140	..	20·00	20·00	20·00	20·00	20·00	..	..	..	..	100·00
3	141	Parindal ..	80	..	..	..	..	..	..	20·00	20·00	20·00	..	60·00
4	143	Pudukalni ..	25	..	..	..	..	..	..	..	..	..	20·00	20·00
		Total ..	277	20·00	20·00	20·00	20·00	20·00	20.00	20·00	20·00	20·00	20·00	200·00
		VI. Vridhachalam Panchayat Union.												
1	207	Vridhachalam ..	67	20·00	20·00	20·00	..	..	..	..	..	..	..	60·00
2	204	Vayalur ..	126	..	..	..	20·00	20·00	20·00	20·00	20·00	..	..	100·00
3	202	Poovanur ..	45	..	..	..	..	..	..	..	..	20·00	20·00	40·00
4	213	Mathur	91	..	..	..	20·00	20·00	20·00	20·00	..	..	..	80·00
5	214	Aladi	63	..	..	..	..	..	..	..	20·00	20·00	20·00	60·00
		Total ..	392	20·00	20·00	20·00	40·00	40·00	40·00	40·00	40·00	40·00	40·00	340·00

536. TABULAR STATEMENT OF REGENERATION IN FARM FORESTRY—*cont.*

FARM FORESTRY PROPOSED AREAS—*cont.*

Serial number. (1)	Village number. (2)	Name of village (3)	Total available area in hectares. (4)	1966 (5)	1967 (6)	1968 (7)	1969 (8)	1970 (9)	1971 (10)	1972 (11)	1973 (12)	1974 (13)	1975 (14)	Total. (15)
		VII. Nallur Panchayat Union.												
1	122	Valasai	63	20·00	20·00	20·00	..	..	..	..	..	..	..	60·00
2	121	Ilangianur ..	27	..	..	..	20·00	..	..	..	..	..	..	20·00
3	38	Perianesalur ..	73	..	..	..	..	20·00	20·00	20·00	..	..	..	60·00
4	48	Seppakkam ..	32	..	..	..	..	..	..	..	2·00	..	..	20·00
5	49	Naraiyur	36	..	..	..	..	..	..	..	..	20·00	20·00	40·00
6	134	Mannampadi ..	55	20·00	20·00	20·00	..	..	..	..	..	..	..	60·00
7	148	Thallanallur ..	49	..	..	..	20·00	20·00	..	..	..	..	..	20·00
8	185	Twalur	61	..	..	..	..	..	20·00	20·00	20·00	..	..	60·00
9	150	Keeranur ..	53	..	..	..	..	..	..	..	..	20·00	20·00	40·00
		Total ..	449	40·00	40·00	40·00	40·00	40·00	40·00	40·00	40·00	40·00	40·00	400·00
		VIII. Kumaratchi Panchayat Union.												
1	273	Sarvarayanpettai Mullangudi.	32	32·00	..	..	..	..	..	..	..	..	..	32·00
2	99	Jayankondanpatti-nam.	27	..	27·00	..	..	..	..	..	..	..	..	27·00
		Total ..	59	32·00	27·00	..	..	..	..	..	..	..	..	59·00
		IX. Kammapuram Panchayat Union.												
1	273	Kammapuram ..	171	20·00	20·00	20·00	20·00	20·00	20·00	..	..	..	..	120·00
2	270	Dharmanallur ..	36	..	..	..	..	..	..	20·00	..	..	..	20·00
3	237	Kumaramangalam	61	..	..	..	..	..	..	..	20·00	20·00	20·00	60·00
4	275	Aziz Nagar ..	40	..	..	..	..	..	20·00	20·00	..	..	..	40·00
5	278	Vadakkuvellur ..	51	..	..	..	..	..	..	..	20·00	20·00	..	40·00
6	291	Periakurichy ..	30	..	..	..	..	..	..	..	..	..	20·00	20·00
		Total ..	389	20·00	20·00	20·00	20·00	20·00	40·00	40·00	40·00	40·00	40·00	300·000

		X. Mangalore Panchayat Union.												
1	55	Avatti	44	20·00	20·00	..	..	..	..	..	..	..	..	40·00
2	57	Pudaiyur (alias) Malayanur.	61	..	..	20·00	20·00	20· 0	..	..	..	..	..	60·00
3	58	Eluthur	40	..	..	..	..	..	20·00	20·00	..	..	..	40·00
4	21	Tholudur ..	45	..	..	..	..	..	..	..	20·00	20·00	..	40·00
5	71	Vallimarutham ..	68	..	..	..	..	..	..	..	..	20·00	..	20·00
		Total ..	258	20·00	20·00	20·00	20·00	20·00	20·00	20·00	20·00	40·00	..	200·00
		XI. Kattumannargudi Panchayat Union.												
1	336	Konamangalam ..	67	20·00	20·00	20·00	..	..	..	..	..	..	..	60·00
2	327	Nagarapadi ..	65	..	..	..	20·00	20·00	20·00	..	..	..	..	60·00
3	250	Kunjakollai ..	28	..	..	20·00	..	..	..	..	..	..	..	20·00
4	326	Sriputhur ..	33	..	..	..	..	..	..	20·00	..	..	..	20·00
5	325	Neduncheri ..	32	..	..	..	..	..	..	..	20·00	20·00	..	40·00
6	340	Anandakudi ..	23	..	..	..	..	..	..	..	..	..	20·00	20·00
		Total ..	248	20·00	20·00	40·00	20·00	20·00	20·00	20·00	20·00	20·00	20·00	220·00
		XII. Orathur Panchayat Union.												
1	289	Podaiyur	40	20·00	20·00	..	..	..	..	..	..	..	..	40·00
2	313	Kanur	40	..	..	20·00	20·00	..	..	..	..	..	..	40·00
3	298	M. Arasur ..	16	..	..	..	..	16·00	..	..	..	..	..	16·00
		Total ..	96	20·00	20·00	20·00	20·00	16·00	..	..	..	..	..	96·00
		XIII. Bhuvanagiri Panchayat Union.												
1	8	Kilvalayamadevi	24	20·00	..	..	..	..	..	..	..	..	..	20·00
2	1	Kathalai	63	..	20·00	20·00	20·00	..	..	..	..	..	..	60·00
3	2	Melvalayamadevi	44	..	..	..	..	20·00	20·00	..	..	..	..	40·00
4	12	Thurinjikollai ..	85	..	..	..	..	..	..	20·00	20·00	20·00	20·00	80·00
			216	20·00	20·00	20·00	20·00	20·00	20·00	20·00	20·00	20·00	20·00	200·00

Regulation of regeneration operations.

537. All the plantation areas which have been sold will be regenerated in the following year, in addition to new areas shown in the preceding paragraph.

538. New areas will be taken up at the rate of 20 hectare in each panchayat union. The area taken up in each Panchayat Union will vary according to the availability of areas and funds. No area below 20 hectare will be taken up in my place unless such smaller bits are found contiguous totalling 20 hectare in extent.

539. While selecting areas, due consideration should be given to the availability of space for grazing for the cattle of nearby villages.

540. *Nursery.*—Temporary nurseries may be located near the planting site if good sites with enough water are available. However, it is better to have one central nursery in each taluk to begin with located in a convenient place. The nursery will be useful not only to raise seedlings for the departmental plantation but also for supply to the public who will be in need of a variety of seedlings for planting in their own lands. A Forester may be posted in charge of the nursery and may be permitted to sell the seedlings at a fixed rate to the public.

541. The central nursery is expected to cater to the needs of the panchayat unions also which may like to plant in areas below 20 hectare which may be uneconomic and inconvenient to plant departmentally.

542. It is suggested that each central nursery should be located on a roadside with a good well, overhead tank, pump-set, potting shed and all implements. It should be atleast one hectare in area and should be fenced all around with barbed wire.

Technique of planting.

543. Before an area is selected for planting the site should be studied for the suitability of the species. All rocky areas and areas which will be submerged for a long time should be omitted. It is quite likely that a site is suitable for a pure plantaion of babul in some places. On the other hand in most of the areas only a limited area may be available for babul and the rest of the areas suitable for other species. After deciding on the choice of species the nursery work should be planned and adequate number of seedlings of the suitable species raised. Only container seedlings should be used. The planting technique will vary with each species. The technique currently prevalent should be adopted. However a general technique is suggested below.

Except the tank and river bunds, the rest of the areas should be thoroughly tractor-ploughed after the first rains. Planting should be done between July and September except in the foreshores of tanks where it may be done later even as the water recedes.

544. Pits of desired depth should be dug suitable for each species, e.g., 30 centimetre for babul and parambai 60 centimetre for bamboos and 45 centimetre for Delonix, tamarind, etc. If water is available nearby watering may be done one the planting day. Otherwise no watering will be necessary if planting is done when the soil is moist enough and when done on a rainy day. The entire boundary of the plantation area should be demarcated by planting palmyrah seeds at 2 metres apart and agaves in between.

545. The size of the planting material should be optimum whereas too small a plant may not be able to grow quickly, a large plant will not lend itself to easy transportation and is likely to be damaged in transit. For babul the optimum size of the seedlings should be the thickness of a pencil and a height of 50 to 75 centimetre. Seedlings which are smaller easily perish during water stagnation. The same size will hold good

for most of the other species like tamarind, parambai, etc. Bamboo seedlings should be at least one year old. *Delonix* cuttings should be about 2 metres long and not less than 15 centimetre in girth. *Glyryidia* and *Vitex* cuttings must be 50 centimetre long and the cuttings taken from an older stems and not from current year shoots. Eucalyptus and casuarina seedlings should be about 50 centimetre in height.

546. *Soil working, etc.*—Two soil workings should be done, one in September and another in November–December. Replacements should be done in the planting year only as and when casualties are noted and should not normally be done beyond October in areas where planting was done before the end of September.

547. *Protection.*—A plot mazdoor will be appointed for each plot who will look after the plot. Strict protection of the plot from animals is necessary at least for the first 3 years. Though fencing is not necessary in most of the areas, in certain villages where protection is likely to be a problem, a strong brush-wood fence may be erected.

SECTION 2—RED SANDERS PLANTATIONS.

548. Red sanders (*Pterocarpus santalinus Linn*) is a valuable species yielding timber of export value. Though there are no natural trees in this division, this species has been known to come up well even in poor shallow and eroded soils. It is prescribed that this species should be tried on a small scale in the eroded slopes of Kangiruppu Bit I Reserved Forest.

549. *Area.*—An area of 52.62 hectare has been selected in the above reserved forest to be planted at the rate of 5.26 hectare per year.

550. *Technique.*—The area will be surveyed and demarcated. Pits 50 centimtre deep and 30 centimetre × 30 centimetre square will be dug at an espacement of 5 metre × 5 metre. A semi-circular bund 50 centimetre in radius will be made on the down hill side to impound water. Container plants about 50 centimetre tall will be planted between July and September.

551. *Nursery practice.*—The nursery should be raised one year ahead of planting. Seeds can be obtained from Vellore East Division where there are some old plantations. The seeds should be sown in a bed with plenty of dung solution, covered and watered. After about a month, the seeds would have germinated. The small seedlings should be carefully removed from the beds and pricked out in polythene bags. As an alternative seedlings or root suckers may be collected from Vellore East division, put in polythene bags for about one or two months and then planted out.

552. Replacement of casualties will be done within the October of the first year itself. Two soil workings will be done one before October and the other in November–December.

SECTION 3—TAMARIND PLANTATION.

553. Tamarind (*Tamarindus indica Linn*) is an important tree the fruit of which is in high demand. It is easy to raise and comes up well in a variety of soils. It is therefore suggested that the Kallakurichi and Ulundurpet ranges should each raise one hectare of tamarind annually.

554. The area should be demarcated, cleared of all growth, uprooted and ploughed. The plot should be fenced with barbed wire. Brush-wood fencing should not be erected as its life is short and tamarind needs protection from animals at least for 5 years. One year old container plants should be planted in pits 30 centimetre × 30 centimetre square and 50 centimetre depth aligned at 5 metre × 5 metre. Planting will be done between July and October. The plantation should preferably be done under kumri. If

people do not come forward to do kumri it should be done departmentally. Varagu, horse-gram, etc., may be allowed to be grown. Cultivation may be allowed up to 3 years. When kumri cultivation is abandoned the area should be again ploughed and sown with Kozhinji (*Tephrosia purpurea*) which is a self seeding manure leaf plant which is not eaten by animals.

SECTION 4—LEUCAENA PLANTATION.

555. *Leucaena* (*Lencocephala* (Lamk) Do Wit (Lead tree) is a small tree, a native of tropical America. Once established it regenerates itself naturally and profusely. It yields small poles, fire wood, fodder and manure leaf and coppices also profusely. In Philippines this species has been recorded to yield 90 m^3 per hectare from one year old coppice and 114 m^3 per hectare in 2-year old coppice in well drained soil.

556. Annually one hectare of plantation of *Leucaena* is suggested to be raised in each of the Kallakurichi and Ulundurpet ranges.

557. The area should be demarcated, all growth uprooted and thoroughly ploughed with tractor. Strong barbed wire fencing must be erected as this is readily browsed by cattle. Two seeds should be dibbled at an espacement of 1 m × 1 m. Two weedings should be done—one in September and another in November.

558. The plants will flower and fruit very early and good seeds will be available in the second year.

SECTION 5—WATERING IN CASURINA PLANTATIONS.

559. Watering is a costly item in raising casuarina plantations. Further, quite a large amount of labour is required for this operation as one hectare of plantation requires about 10 women mazdoors. Great difficulty is often experienced in mustering a large posse of mazdoors for this work alone. Therefore it may be better to think of some mechanical contrivances for watering.

560. Though hand-pumps with filter points have been found to be useful in areas with deep water table they cannot replace the labour for watering the individual plants. Therefore it is suggested that a number of pipes may be driven in the plantation area and water sprayed in the plantation with the help of portable pumpsets and adequate length of hose.

561. A pipe of 3" diameter driven at every hectare and operated with a petrol-driven 2 to 3 H.P. engine pumpset may be useful. This may be tried in one of the plantations and the technique standardized. Not more than 2 mazdoors will be required for the watering. A 3 H.P. pumpset can deliver a minimum of 10,000 l. of water per hour and this will be sufficient to water a hectare of plantation. Thus with one pump-set and two mazdoors 5 to 8 hectare of plantation can be watered in a day.

SECTION 6—MISCELLANEOUS EUCALYPTUS TRIALS.

562. There may be a number of species of Eucalyptus suitable for this tract. Before attempting them on a large scale, it is necessary to undertake experimental planting over small areas, to find their performance in this division. The species recommended are *Eucalyptus citriodora*, *Eucalyptus rudis*, *Eucalyptus camaldulensis*, *Eucalyptus melanophloid*, *Eucalyptus hemiphloiae*, *Eucalyptus gomphocephala*, *Eucalyptus astringens*, *Eucalyptus alba*, *Eucalyptus brockwayi*, *Eucalyptus occidentalis*, *Eucalyptus terminalis*, *Eucalyptus obosa*, *Eucalyptus papuwana*, *Eucalyptus tessellaris*, *Eucalyptus exserta*, *Eucalyptus setosa*, *Eucalyptus viridis*, etc.

563. Seeds of known provenences will be obtained from Australia through the State Silviculturist and trials conducted over 2 acres in extent for each species in Ulundurpet range. The technique will be the same as for hybrid eucalyptus. The work may be undertaken by the State Silviculturist or by the division under the guidance of the State Silviculture.

SECTION 7—MANGROVES.

564. The mangrove vegetation in Kille and Pichavaram Reserve Forest extending over an area of 1,358 have will be strictly protected. It is probably the best vegetation in the State with most of the mangrove species occurring in profusion. The beat subordinates should be provided with two dug-out canoes to facilitate their movement. Motor boats will be of no use in the area as the back-waters are shallow.

565. Artificial regeneration of *Avicennia, Rhizophora* and *Brugniera* will be attempted over small areas of about 4 acres every year. The seeds and seedlings of these species will be collected after they have fallen into water and planted. While *Avicennia* may be broadcast sown in areas above the water level the seedlings of *Raizhophora* and *Brugniera* should be planted below the high tide level at an espacement of 1 m. × 1 m. These regeneration areas will be fenced and protected from grazing animals.

566. Samples of viviparous seedlings of *Rhizophora* and fruits of *Avicennia* which are abundant in the locality may be sent to the Central Leather Research Institute and tanning extracting industries to evolve a suitable method of tanning extraction so as to create a demand for the produce. Whenever there arises a demand, the right to collect the seedlings from the area will be sold in auction as an item of minor produce.

567. Before undertaking inspection of mangroves it is necessary to know the times of high and low tides as it is impossible to row a boat during the low tide. Tide tables are available with the Port Officer at Cuddalore. About 1½ hours have to be added to the tide table figures for these mangroves areas. A sample tide table is give in Appendix X.

SECTION 8—FIRE PROTECTION.

568. Fires though rare in this division have been found to occur here and there in the past. No special measures are prescribed except keeping the boundary lines of each reserve clean and maintaining the footpath, inspection paths, cart tracks, etc., clean. However, if fires are found to occur in the plantations, fire tracing should be undertaken around every plantation in view of the large scale eucalyptus plantations.

SECTION 9—ROADS.

569. There are no roads maintained in this division. In view of the extensive cashew areas and the large scale regeneration prescribed, it will be necessary to have adequate length of roads. The following roads are prescribed to be formed and maintained :—

Panruti Range.

(1) A road from Virasinanguppam passing through Kasigruppu Bit I and Bit II Reserve Forests 20

(2) A road from Mudapalli to Nadukuppam passing through the Kangiruppu Bit I Reserve Forest East to West 16

Vridhachalam Range.

k.m.

(3) A road connecting Mudapalli and Kotteri across Semakottai Reserve Forest North to South 13

(4) An approach road to Semakottai Reserve Forest from Vriddachalam Aladi road near Virarettikuppam 4

(5) A road from the level crossing to the interiors of Narimanam Reserve Forest 4

Ulundurpet Range.

	k.m.
(6) A road across Pandur Reserve Forest connecting the Ulundurpet-Tiruvennainallur road and the Ulundurpet-Kallakurichi road ...	4
(7) A road to Sirupakkam Reserve Forest from the Ulundurpet-Kallakurichi road running East to West inside the Reserve Forest ...	3
(8) A road connecting the Elavanasur Asanur road and Sembimadevi via Alwarmalai Reserve Forest	10
Total length ...	74

570. These roads will be made at the rate of 7.5 kilometre or more per year. The roads will be repaired and maintained every year.

SECTION 10—BUILDINGS AND WELLS.

571. At present there are no departmental buildings for all offices and most of the staff. There are only 20 buildings to accommodate forest guards and watchers and 3 buildings to accommodate foresters. The following are the buildings proposed—

Designation of the officer.	*Residential.*	*Office.*
(1).	(2)	(3)
District Forest Officer	1	1
Range Officer	6	6
Foresters	40	..
Forest Guards and Watchers	52	..

572. There are only 6 wells at present. At least 57 wells will be required for the entire division.

SECTION II—UNRESERVED LANDS.

573. All the unreserved lands which are at present under the departmental control should be reserved as early as possible as the reservation proposals are pending for a long time. The reservation of Pandur, Sirupakkam and Kuthagudi unreserved lands should be easy as they were disreserved only recently for Neyveli Lignite Corporation.

SECTION 12—BOUNDARIES.

574. The boundaries of all the reserved forests were verified by a deputy surveyor who had pointed out the various defects. The defects should be rectified within the first 3 years of this plan. In most of the boundaries the boundary stones are either missing, fallen or broken. They have to be replaced. In some, the numbers are wrongly written. A list of fallen and missing cairns is given in appendix V. All boundaries should be cleared annually to the prescribed width. Palmyrah seeds will be dibbled between July and October all along the boundary lines at an interval of 2 m. This will be a permanent demarcation besides being a source of revenue at a later date. The planting should be completed by the end of this plan taking 1/10th of the length every year.

SECTION—ENCLOSURES.

575. There are a number of enclosures in the reserved forests with rights of way. It will not be in the interests of department to allow these enclosures well inside the forest area especially in cashew areas. It is suggested that these encloures may be bought out right or exchanged for areas at the edges of the forests and the rights of way, etc., extinguished.

SECTION 13—MANURE LEAF.

576. There is no demand for manure leaf in this division. However if demands arise the District Forest Officer will allow removal of manure leaves from the areas that are to be felled for regeneration. The removal should be regulated by pemits. Green manure species planted in all soil conservation bunds will be ready for exploitation for manure leaves in 5 years. These plants may be allowed to be lopped on a rotation of 3 years wherever there is demand.

SECTION 14—RAIN GUAGES.

577. Rain guages of the current model should be installed at the rate of one for every 10 square kilo metre of forest area. Isolated casuarina plantations however small should etch be installed with a rain-guage. Wherever possible they should be located near about the subordinate quaters.

SECTION 15—WILD LIFE.

578. Alwarmalai Reserved Forest, Krishnapuram Reserved Forest and Tagarai Reseved Forest which contain spotted deers, panthers and wild pigs are prescribed to be closed for shooting for 10 years. There is no shooting done by licence holders in these areas. The number of guns without licence are many around the Kalrayans with the result poaching is rampant in Tagarai Reserved Forest and hte Jaghir forests. Effective steps will have to be taken to detect all unlicenced guns and prevent poaching.

579. Black bucks may be introduced in Alwaramalai and Krishnapuram Reserved Forests and peacocks in Tagarai Reserve Forest.

SELTION 16—MACHINERY.

580. *Tractors.*—A number of tractors will be required to plough the cashew areas, to clear the areas for afforestation, plough the land and do soil working after planting. There are 6250 hectare of cashew out of which one third of the area will be soil worked every year. The effective area to be soil worked will be about 1,000 hectares per year. So there should be three medium tractors of 50 to 80 h.p. preferably Crawler types.

581. The Eucalyptus and Rehabilitation working Circles will have 460 hectares to be clearfelled bunded and ploughed every year. For this three should be three heavy Crawler tractors of not less than 120 H.P. for clearing and bunding work, two medium crawler tactors of 50 to 80 H.P. for ploughing and two medium wheeled tractors of 50 to 80 H.P. for soil working after planting. There should also be an additional wheeled tractor with trailer for transporting the seedlings to the planting sites, for pumping and other miscellaneous works.

582. The total minimum requirement of tractors for this division will be as shown below :—

(1) Heavy Crawler tractors 12 h.p. and above	3
(2) Medium Crawler tractors 50 to 80 h.p.	5
(3) Medium wheeled tractors 50 to 80 h.p.	3
Total ...	11

583. The heavy tractors should be equipped with dozers and bund formers. The medium crawler tractors must be provided with disc ploughs, bund formers and dozers. The wheeled tractors must have a 5 ton trailer, disc ploughs and cultivators. They can also be used for pumping water in nurseries.

584. *Pump-sets.*—Adequate number of pump sets will have to be provided for the division and the practice of paying for baling out water should be stopped forthwith. One pump set will be required for each nursery. In addition, every central nursery should have a pump set. Wherever electricity is available electric pump sets should be installed.

585. A minimum of 6 pump sets will be required for this division.

CHAPTER XI—ESTABLISHMENT AND LABOUR.

SECTION I—ESTABLISHMENT.

586. In addition to the existing staff of this division of the following is considered necesasry for the works proposed in this plan. The protection of jahir forests needs the services of three Forest Guards to ensure better work. In view of the 11 tractors proposed, there should be 13 drivers and 11 cleaners at the rate of 2 drivers and one clearner for evey heavy tractor and one driver and one cleaner for every other tractor. In addition, the services of a mechanic will also be needed to attend to the repairs and maintenance of these tractors.

SECTION 2—LABOUR.

587. Labour is becoming scarce year after year. Owing to the five year plans, there is plenty of development activity everywhere. The forest work is not only difficult but the wages offered are low compared to the wages paid for agricultural and other works. High wages are paid to labour at Neyveli which is an industrial place and therefore the forest work can attract enough labour only if higher wages are paid. Further dependence on labour for all work should be reduced by introducing proper machinery and labour should be resorted to only for such works where labour is absolutely necessary.

588. It is increasingly difficult to the executive staff to collect enough of labour for the various works. As the labour is paid on daily basis there is a tendancy to do minimum work. It will also be worthwhile to start executing works through the agency of contractors by offering attractive terms. It will be better if wages are paid according to the amount of work turned out and not on daily basis. This will be possible only if the forest schedule of rates are revised and attractive rates offered.

CHAPTER—FINANCIAL FORECAST AND COST OF THE WORKING PLAN.

SECTION 1—FINANCIAL FORECAST.

589. The estimated revenue and expenditure during the peiod of this plan are shown below :—

Name of the working circle. (1)	*Revenue.* (2) (RUPEES IN LAKHS.)	*Expenditure.* (3) (RUPEES IN LAKHS.)
1 Cashew Working Circle	78 00	11 40
2 Casuarina Working Circle	2 00	0 55
3 Eucalyptus Working Circle	2 50	9 65
4 Sandal Working Circle	..	0 25
5 Rehabilitation Working Circle	..	5 00
6 Grazing Working Circle	0 05	..
7 Soil Conservation Working Circle	..	10 00
8 Miscellaneous Regulations	..	25 00
2 Establishment	..	2 00
Total ..	82. 55	63 85

Surplus over 10 years	...	...	= Rs. 18.70 lakhs.
Average revenue per year	...	...	= Rs. 8.255 lakhs.
Average expenditure per year.	...	...	= Rs. 6.385 lakhs.
Average surplus per year	...	...	= Rs. 1.870 lakhs.

Section 3—Cost of the Working Plan.

590. The cost of the preparation of this working plan is Rs. 71,767 and the details are furnished below :—

		Rs. P.
(1) Conservancy and Works	... ...	1,748.47
(2) Pay of Officers	... ...	11,998.19
(3) Pay of Establishment	... ...	28,918.16
(4) Dearness Allowance	... ...	6,770.73
(5) Travelling Allowance	... ...	12,705.81
(6) Other Compensatory Allowance	... ...	1,535.24
(7) Contingencies	... ...	34.53
	Total ...	71,766.69

591. The staff consisted of one Assistant onservator of Forests, two Range Officers, six Foresters, one Clerk and four peons.

592. The work for the preparation of this working plan was commenced on 24th May 1963 and finished on 23rd May 1965.

SUMMARY OF PRESCRIPTIONS.

CHAPTER 1—BASIS OF PROPOSALS.

General objects of management.—The objects of management are—

(i) to improve and increase the area under cashew to obtain maximum yield of cashew nuts 265

(ii) to grow Eucalyptus on a large scale to meet at least partially the demands of firewood of Madras City;

(iii) to work the casuarina plantations for the supply of firewood on a sustained basis;

(iv) to rehabilitate the degraded forests by planting useful species in order to meet the pastoral and domestic needs of the local population;

(v) to improve and exploit sandal bearing forests;

(vi) to conserve and improve the soil, moisture, flora and fauna and

(vii) to take all steps to maintain the forests in a state of increasing productivity for obtaining maximum financial return per hectare in perpetuity.

Working circles and their area.		*Area in hectares.*
(1) Cashew	... ...	6,250
(2) Casuarina	... ...	107
(3) Eucalyptus	... ...	3,031
(4) Sandal	... ...	5,909
(5) Rehabilitation	... ...	1,250
(6) Minor Forest Produce	... ...	All forest areas
(7) Grazing	... ...	All forest areas except closed areas
(8) Soil Conservation	... ...	10,000

Period of the Working Plan.—The working plan will be in force for a period of 10 years from 1–4–1966 to 31–3–1975. 268

CASHEW WORKING CIRCLE.

Geneal constitution.—The Working Circle will comprise all areas so far regeneatred under cashew and the remaining unplanted areas in Ammeri and Velangulam Reserved Forests. 269

Area and distribution.—The total area is 6,250.26 hectares. There are 6 series 2 in Panruti Range, 1 in Ulundurpet Range and 3 in Vridhachalam Range, East series is divided into coupes and each coupe into plots—details of area given in the text. 270, 271

Analysis of the crop.—Enumeration revealed that plants of normal growth form 33 per cent, backward plants 38.6 per cent and blanks 28.4 per cent. The crop is not uniform and is overgrown with rank growth and soil under several stages of erosion. 272–278

Method of treatment.—The treatment proposed will aim at (1) extending the area under cashew, (2) continuing the present method of exploitation, (3) undertaking proper cultural measures, and (4) protecting the plantations from pests and diseases 279

Silvicultural system.—Clearfelling followed by artificial regeneration. If regeneration comes up naturally only the gaps will be filled. 280

Choice of species—Anacardium occidentale.—Linn only heavy yielding varieties will be chosen 381

Rotation.—A tentative rotation of 30 years ... ...

Espacement.—3.5 metres by 3.5 metre reasons for adopting this espacement is discussed. 282

Regulation of yield.—*Regulated by area.* The unit of sale will be plot of about 20 hectares or a Kumri plantation however small it may be. The District Forest Officer may include two or more units in a unit if necessary. 384

Calculation of yield.—The yield is likely to vary from 50 kilograms to 400 kilograms per hectare. An average of 200 kilograms per hectare or 1,200 tonnes for the division after 1970 is expected. 385–388

Regeneration.—Regeneration will be done after completely clearfelling, uprooting and ploughing and done by Kumri wherever there is demand. The remaining areas will be planted within the first 3 years of this plan.

Bunding will be done before planting. 290–291

Seeds will be collected from heavy yielders during the planting year and dibbled in August at a depth of 5 centimetres. Casualties will be replaced in the first year itself using container seedlings 292–294

Subsidiary silvicultural regulations.—Jungle growth will be periodically removed either manually or using tractors and the soil worked to a depth of 15 centi metres. In current regeneration areas soil will be worked twice in the first year 295–299

Thinning will be done in plantations when trees begin to overlap with one another. Rules for thinning and the minimum number of trees to be left after each thinning given in detail. 300–309

All climbers will be cut, fertilizer application is suggested and gaps measuring 10 acres or more will be planted. 310–312

A 3 year tending cycle is prescribed and every year one third of the crop will be cleared of rank gowth, soil worked, thinned, climbers cut and manure applied. Details of area to be taken up each year is given. 313–314

Other regulations.—The plantations will be sold in units in open auction The lease period will end in May. Spraying of pesticides and fungicides preferably aerially is suggested. Each pear's regeneration coupes and plots will be demarcated with stones. Experiments on manuring, assessing yield and insect and disease control have been suggested. **315–330**

CHAPTER III—CASUARINA WORKING CIRCLE.

General constitutions.—The Working Circle will extend over reserves and unreserves of 106.85 hectares where casuarina has been planted. **331–332**

Division of the area.—There will be 2 series, viz., the Porto Novo Series and river fringe series **333**

Silvicultural system.—Clearfelling and artificial regeneration. **334**

Choice of species—Casuarina equisetifolia.—Forest. **335**

Rotation.—Seven years. The reasons are detailed. **336**

Felling.—The plantation will be divided into 5 hectares bits each bit for sale and the lease period will be 6 months from April. The contractor will uproot the stumps and level the area. **337–340**

Yield.—About 50 trees per hectare. The river fringe series will be poor in yield. **341–342**

REGENERATION.

Preliminary works.—Tractor ploughing will be done and 2 metres tall fence erected. Cones will be collected in October–November and seeds extracted. There are 700 to 760 seeds per gram. **346**

Nursery.—The nursery at Porto Novo will serve as a central nursery for the entire division. The beds will be 10 metres long and 1 metre broad and 80 grams of seeds will be sown per bed. About 2,000 seedlings can be obtained from a bed **347–349**

Wells.—Wells are suggested at the rate of 2 for every hectare. Size of the wells will be 5 metres diameter at the top and 2.5 to 3 metres at the bottom. In areas with water table below 2 metres filter points and hand pumps are suggested. **350**

Planting.—June to August 0.5 metre tall seedlings will be used. ... **351–352**

Watering.—Will be restricted to the first 16 months from the time of planting 3 litres of water for each plant twice a day for the first 15 days, once a day for the next 15 days and twice a week for the rest of the period. **353, 355**

Subsidiary Silvicultural Regulations.—Replacements will be done in the first year only. Soil will be worked all over the area twice in the first year and once in the second year. **356–361**

Proning will be done in the 4th year upto one-third height **362–363**

The area will be closed to grazing for 3 years. **364**

Dead and wind fallen trees will be removed every year. **366**

Each coupe will be demarcated by planting Eucalyptus on the boundary. The plantations will be protected against saline water. Necessary statistics will be collected. **367–370**

EUCALYPTUS WORKING CIRCLE.

General Constitution.—The object of this Working Circle is to produce maximum amount of firewood per hectare for supply to Madras City after meeting local needs. The circle will extend over areas already regenerated and fresh areas with fairly deep loamy red soil. 371-373

Division of the area.—The total area is 3031.18 hectares and it is divided into 6 series in Ulundurpet and Kallakurichi Ranges. 374-375

METHOD OF TREATMENT.

Choice of species.—Hybrid Eucalyptus of Mysore origin. 377-378

Silvicultural system.—Simple coppice supplemented by planting. ... 380

Rotation.—A tentative rotation of 10 years. 381

Espacement.—2.5 metres by 2.5 metres.

Yield.—Yield will be regulated by area.

REGENERATION.

Preliminary operations.—All preliminary operations like clearfelling jungle growth, uprooting and soil conservation will be done one year ahead of planting. Clearfelling will be finished by August-September, uprooting by January-February preferably using tractors. Each regeneration area wil be divided into 10 hectares plots to facilitate supervision—there will be roads and paths all around each plot. Soil conservation works like bunding will be done before January–February 384-388

NURSERY PRACTICE.

A central nursery is suggested for each range. There will be two kinds of nursery viz., the bed nursery and container nursery beds will be 10 metres by 1 metre, 60 grams of good seeds will be sown-picking out in polythene bags will be done when seedlings are 2 centi metres to 4 centi metres and they will be kept in shade until establishment. Later they will be kept in full sunlight. Planting size is 30 centi metres tall. The bags should be shifted twice in a week The seedlings can be transported by lorries or tractors. ... 389-401

Preparation of the planting site.—In the planting year the area will be tractor ploughed after the first rains. After aligning 2.5 centimetres by 2.5 pits 30 centimetres deep will be dug out. 402-404

Planting out.—The planting season is between July and October. A suitable fertilizer and insecticide should be added to each pit. Details of planting each year are given. 405-410

Subsidiary silvicultural regulations.—The miscellaneous regrowth will be cleared once a year for the first two years. Soil will be worked using tactors. Replacement of casualties will be done in the first year if the survival's below 80 per cent. If plants die in pitches other species such as parambai and babul will be planted 441-445

Method of Executing Fellings.—The coupes will be soild in auction divided into 10 hectares plots. The lease period will be 6 months. Two sets of coupes will be worked every year one between April and Sptember and the other between October and March. The removals will be measured and recorded. The size of a stack will be 3m x 1.5m x 1m (4.5 m3). Tabular statement of fellings has been given.

Other regulations.—Termite attacks will be detected and measures suggested. Grazing will be prohibited for 3 years. Every 10 hectares plot will be surrounded by 5 m. wide road. Measures against fire will be undertaken. Every coupe and plot will be provided with a plantation board.

CHAPTER V—SAND WORKING CIRCLE.

General constitutions.—Covers the sandal areas of Rangappanur, Parigam and Tagarai Reserved Forests.

Division of the area.—The area of the Working Circle is 6,428.65 hectares with an effective area of about 1100 hectares. There is only one felling series. 427–428

Analysis of the crop.—Sandal occurs in patches or scattered. The crop is young and devoid of spike 429–430

Method of treatment.—Only dead trees will be extracted on a felling cycle of 3 years. There will be 3 coupes 431–434

Method of executing the fellings.—The felling and cleaning will be governed by sandalwood rules and the rough cleaned wood sent to Tirupattur. 435–437

Subsidiary Silvicultural regulation.—Tending will be done at the time of marking artificial regeneration will be done at the rate of 10-11 hectares per year by complete clearfelling, uprootal of miscellaneous growth, ploughing, fencing and planting of contained seedlings at 3.5m x 3.5m. No soil working will be done 438–444

Other Regulations.—Occurrence and spread of spike will be recorded and control method if prevalent will be adopted. A block of 445.15 hectares will be completely closed to grazing to observe natural regenration. The area under artificial regeneration will also be closed to grazing througout the period of this plan 445–446

CHAPTER VI—REHABILITATION WORKING CIRCLE.

General Constitution.—Includes portions of ex-panchayat Reserved Forests with adequate soil 449

Division of the area.—The total area is 1578.23 hectares divided into 3 series 451

METHOD OF TREATMENT.

Object.—To convert the degraded forests into better type by planting useful species 453

Choice of species Acacia ferruginea, Acacia arabiia, Albizzia lebbeck, Tamarindus indica, Pongamia glabra, Azadirachta indica Bassia latifolia, Hardwickia binata, Santalum album and Eucalyptus hybrid 454

Silvicultural system.—Simple coppice No area will come for felling within the plan period 455

Rotation.—Tentative rotation of 30 years 2m x 2m espacement and conversion period of 10 years 456

METHOD OF REGENERATION.

Preliminary operations will be done one year ahead of planting. Soil Conservation works will also be done only container plants will be used. Eucalyptus will form 50 per cent of the planting stock. The rest of the species will be planted mixing them. A practical method of mixing is given 457–467

Subsidiary Silvicultural Regulations.—Casualties will be replaced within the planting season of the first year. Soil working will be done for the first two years 468–470

Other Regulations.—Fencing will be done and the area will be closed to grazing for 5 years. One plot mazdoor will be employed for each plantation and plantation boards will be provided. Stone slabs will be planted on all four corners. 471–474

CHAPTER VII—MINOR FOREST PRODUCE WORKING CIRCLE.

General constitution.—Will cover all forest areas except the cashew Working Circle. Fourteen kinds fo produce have been listed out 476–478

Method of Treatment.—The right to collect will be leased out with a lease period of oney ear from July. The existing system of exploitation treating each range a unit of sale will continue. The coconut tope at Kille will be a separate unit 479

Subsidiary silvicultural regulations.—Manuring with fish meal etc. will be done for the coconut tope at Kille. The tope may be leased out for 5 years 480–481

Other regulations.—The contractors will furnish accounts of collections to the concerned Range Officer 482

CHAPTER VIII—GRAZING WORKING CIRCLE.

General constitution.—This is an overlapping Working Circle extending over the entire division except the closed areas 484

Method of treatment.—Grazing will be regulated by permits sold annually 485–486

Other regulations.—All regeneration areas, areas closed for punitive measures or for other purposes will be closed for a specific period—goats will be strictly prohibited. Areas closed will be notified in the District Gazette. 487–489

CHAPTER IX—SOIL CONSERVATION WORKING CIRCLE.

General constitution.—Overlapping Working Circle covering areas under cashew, Eucalptus and rehabilitation Working Circles in order to preserve soil and moisture 490

Area.—10,000 hectare are prescribed—Cashew 6,017 hectare, Eucalyptus 3,031 hectare and rehabilitation 1,250 hectare 491

Analysis of the area.—The areas are divided into two categories. A with deep soil and annual rainfal of over 1,000 millimeter and B with shallow soil and annual rainfall of below 1,000 millimeter. The maximum rainfall in both areas in 24 hours is 275 millimetre. 492–494

Method of Treatment.—Building and gully plugging will be the main measures. Sizes of bunds suitable to each kind of terrain are described in detail. Suggestions have been given to classify the gullies and general measures. 495–518

Subsidiary regulations.—The bunds should be consolidated by planting suitable species at 1 metre x 1 metre and repairs should be carried out then and there. The bunded area should be protected from cattle for two years. Control forms should be posted. 519–522

CHAPTER X—MISCELLANEOUS REGULATIONS FARM FORESTRY.

Constitution.—The scheme will be extended over all public lands outside the reserved forests and will cover areas already planted 525

Area.—These are 17 panchayat unions which will be considered each a series 526

Method of treatment.—20 hectare will be taken up in each panchayat union every year. Species useful for timber, firewood, fodder and manure will be planted. Species suitable for different localities are prescribed. Different localities are prescribed. Different rotations are suggested for individual species and the yield will be regulated by area. A list of areas has been given for regeneration every year. Temporary nurseries at the plantation site and atleast one Central Nursery for every taluk have been suggested 527–536

Technique of complete removal of rank vegetation, ploughing and planting container plants and cuttings is suggested. Soil will be worked after planting and one point mazdoor provided for each plot 537–547

Red Sanders Plantations.—Red sanders plantations at the rate of 5.26 hectare in Kangiruppu Reserved Forests has been prescribed. The espacement will be 5 metre × 5 metre and the pits will be 50 centimetre deep with a bund on the down hill side 548–552

Tamarind Plantation.—One hectare of tamarind plantations will be raised in Kallakurichi and Ulundurpet ranges annually under Kumari. Espacement will be 5 metre × 5 metre and the area will be fenced 553–554

Leucaena Plantation.—Leucaena which is first growing species will be planted at the rate of one hectare per year in Kallakurichi and Ulundurpet ranges. The area will be fenced, cleared, ploughed and seeds dibbled at 1 metre × 1 metre 555–558

Watering in Casuarina Plantations.—A new method of watering using portable pump-sets, tube wells and hose-pipes is suggested to be tried to reduce cost and dependence on labour 559–561

Miscellaneous Eucalyptus trials.—A number of Eucalyptus species have been suggested for trial on a small scale 562–563

Mangroves.—The mangroves will be strictly protected. The subordinates will be supplied with 2 dug out canoes. Artificial regeneration of *Avicemia, Rhizophora* and *Bruguiera* has been suggested at the rate of 4 acres every year. The fruits will be collected and made use of in tanning industries and a demand built up for this produce 564–567

Fire Protection.—Boundaries and paths will be cleared annually and if necessary fire tracing will be done 568

Roads.—74 kilometre of roads have been suggested mainly for the plantation areas 569–570

Buildings and Wells.—Buildings and wells for all officers and offices have been suggested 571–572

Unreserved Lands.—All unreserved lands should be got reserved as early as possible especially those Reserved Forests which were disreserved some yeahs age 573

Boundaries.—The defects in reserve boundaries will be rectified and planted with palmyrah 574

Enclosures.—It is suggested that all enclosures should be bought out-right or exchanged for areas at the forest margins and all rights of way extinguished 575

Manure Leaf.—Manure leaves may be removed from areas which are to be felled for regeneration. The species planted on soil conservation bunds may be exploited after five years 576

Rain Guages.—Rain guages will be installed at every 10 square kilometre to forest area 577

Wildlife.—Alwarmalai, Krishnapuram and Tagarai Reserved Forests will be closed for shooting. Black buck and peacocks may be introduced 578

Machinery.—11 tractors have been proposed, 3 heavy crawlers, 5 medium crawlers and 3 medium wheeled 580–583

Six pumpsets have been proposed 584–585

CHAPTER XI—ESTABLISHMENT AND LABOUR.

Establishment.—In addition to the existing staff three Forest Guards, eighteen tractor drivers, eleven cleaners and one mechanic have been proposed. 586

Labour.—Labour is becoming scarce and should be paid higher wages. It will be worthwhile to execute the works through contractors or paying labour according to the amount of work turned out. Dependence on labour for all works should be reduced 587–588

CHAPTER XII—FINANCIAL FORECAST AND COST OF THE WORKING PLAN.

Financial forecast.—The anticipated revenue during the plan period will be Rs. 82.55 lakhs and the expenditure Rs. 63.85 lakhs leaving a surplus of Rs. 18.70 lakhs 589

Cost of the Plan.—The working plan has costed Rs. 71,766.69 590

Staff employed for the preparation of the Working Plan 591

Period of preparation of the Working Plan 592

APPENDIX I.

A. Meterological data for Cuddalore Station Normals.

Station—Cuddalore.

Month.	Mean daily maximum temparature.	Mean daily minimum temperature.	Highest temperature over recorded.	Lowest temperature over recorded.	Average relative humidity recorded at 08·30	Average relative humidity recorded at 17·30	Heaviest rainfall in 24 hours in inches.	Number of days with Precipitation 0·01″ or more.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	°F	°F	°F	°F	HRS. IST.	HRS. IST.		
January	82·7	68·9	89	56	87	69	5·13	5
February	85·1	70·0	97	58	87	69	4·70	3
March	88·4	72·7	102	61	83	68	7·21	1·5
April	92·2	77·7	108	67	78	72	4·74	3
May	97·8	80·4	110	70	71	69	6·04	2
June	98·6	80·3	109	70	67	54	3·25	4
July	96·0	78·6	105	66	72	55	3·20	7
August	94·2	77·0	103	69	76	62	5·30	8
September	92·5	76·8	101	68	78	69	5·34	11
October	88·5	75·2	102	66	84	71	8·20	13
November	84·4	72·7	95	62	87	74	12·20	15
December	82·6	70·2	95	52	86	72	16·79	9
Annual	..	..	..	..	..	..	..	81·5

APPEND

B. STATEMENT SHOWING THE MONTHLY AND ANNUAL FORMALS OF RAIN

Cuddalore South

Serial number and name of station.	*Geological Co-ordinates.* *Lat.*	*Long.*	*Number of years.*	*January.*	*February.*	*March.*	*April.*	*May.*
(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)
1 Cuddalore ..	11·46	79·46	10	53·8	9·6	27·2	15·3	46·3
Average rainy days ..				3·1	0·5	0·3	1·0	1·9
2 Panruti	11·46	79·34	10	36·2	2·1	8·8	10·2	69·3
Average rainy days ..				1·7	0·2	0·2	1·1	2·5
3 Kurinjipadi ..	11·34	79·36	10	53·8	4·6	15·8	11·7	17·4
Average rainy days ..				1·8	0·4	..	1·0	1·9
4 Portonovo ..	11·30	79·45	10	88·7	5·6	15·6	20·2	49·1
Average rainy days ..				2·4	0·2	..	0·9	1·8
5 Chidambaram ..	11·24	79·42	10	50·2	14·9	34·8	19·6	63·3
Average rainy days ..				3·1	0·9	0·3	1·1	2·6
6 Vriddhachalam ..	11·30	79·20	10	24·2	0·9	9·0	23·4	117·5
Average rainy days ..				1·7	0·2	0·3	1·6	3·8
7 Ulundurpet ..	11·42	79·17	10	27·5	3·8	10·4	19·9	83·2
Average rainy days ..				1·4	0·1	0·7	0·9	2·3
8 Thirukoilur ..	11·58	79·15	10	33·2	3·0	18·7	14·8	72·4
Average rainy days ..				1·4	0·4	0·4	0·9	3·5
9 Kallakurichy ..	11·44	78·56	10	39·1	1·3	14·6	21·4	75·2
Average rainy days ..				2·1	0·2	0·5	1·0	5·6
10 Sankarapuram ..	....		10	28·7	4·5	13·3	15·3	40·6
Average rainy days ..				1·4	0·3	0·2	1·0	3·1
11 Neyveli	....		10	33·3	2·6	9·4	26·6	61·2
Average rainy days ..				2·4	0·6	0·7	2·7	4·8
Average rainfall ..				42·6	4·8	16·1	18·0	66·0
Average number of rainy days ..				2·0	0·4	0·3	1·3	3·1

IX-I—cont.

FALL IN M.M. AND AVERAGE NUMBER OF RAINY DAYS FOR THE PERIOD 1954-63.

Division.

June.	*July.*	*August.*	*September.*	*October.*	*November.*	*December.*	*Total for year.*	*Higher rainfall recorded for 24 hrs.*
(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
40·0	80·1	131·5	125·8	236·9	316·9	138·1	1,221·5	242·31 M.M. on 18th May 1955.
3·9	5·6	9·0	7·6	11·4	12·2	5·0	61·5	
42·2	85·8	138·3	115·9	212·9	227·5	109·3	1,058·5	213·36 M.M. on 18th May 1955.
3·1	4·2	8·1	6·5	11·5	9·4	5·4	53·9	
37·6	109·4	138·8	157·8	238·6	317·4	157·8	1,228·7	215·90 M.M. on 22nd October 1954.
2·9	4·3	7·7	6·8	9·7	10·9	4·8	52·2	
36·1	79·3	99·6	126·4	257·9	392·4	203·6	1,374·5	265·93 C.M. on 22nd October 1954.
2·8	4·9	6·5	6·3	10·4	12·0	7·1	55·3	
33·4	75·1	100·3	101·3	270·5	355·4	211·6	1,330·4	233·17 M.M. on 22nd October 1954.
3·3	6·3	8·4	7·5	13·6	13·3	8·2	+68·6	
52·5	83·9	151·5	144·9	260·4	222·0	96·1	1,186·1	196·08 C.M. on 28th May 1955.
4·4	4·7	6·5	8·5	12·9	9·7	5·2	59·5	
41·2	55·6	122·2	108·81	184·8	194·9	84·1	935·7	275·4 M.M. on 28th November 1959.
1·4	2·4	5·3	4·6	8·2	7·1	3·6	38·0	
39·5	89·1	145·2	158·2	201·2	158·7	67·4	1,001·4	150·62 M.M. on 18th May 1965.
4·9	6·7	8·8	8·2	12·2	8·6	4·7	60·7	
69·8	73·7	111·2	143·8	174·5	162·5	75·9	963·[illegible]	260·01 M.M. on 28th November 1959.
6·5	6·4	10·6	9·6	11·4	10·4	5·7	70·9	
21·0	61·4	89·5	142·1	135·8	146·0	45·6	743·8	246·4 M.M. on 29th November 1959.
2·1	3·8	5·9	7·8	7·8	6·5	3·3	43·2	
44·8	82·7	126·8	127·3	223·9	246·2	81·1	1,065·9	196·0 M.M. on 28th November 1959.
7·2	9·3	13·9	12·1	14·9	12·8	6·5	87·9	
41·6	79·7	123·0	132·0	218·0	249·0	115·5	1,106·3	
3·9	5·3	8·2	7·8	11·2	10·3	5·4	59·2	

APPANDIX I—*cont.*

C. RAINFALL DATA OF IMPORTANT STATIONS

I. Panruti (Rainfall in millimetres).

Serial number and name of the month. (1)	1954. (2)	1955. (3)	1956. (4)	1957 (5)	1958 (6)	1959 (7)	1960 (8)	1961 (9)	1962 (10)	1963 (11)	Average rainfall (12)
1 January	65·86 (N.A.)	54·87 (2)	4·06 (1)	[illegible]	0·59 (3)	(—)	..	150·16 (4)	.. (—)	86·50 (7)	36·2 (1·4)
2 February	2·54 (N.A.)	(—) ..	(—) ..	(—) ..	(—) ..	0·67 (1)	(—)	17·30 (1)	.. (—)	Nil (—)	2·1 (0·17)
3 March	74·68 (N.A.)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	13·00 (2)	8·8 (0·17)
4 April	27·94 (N.A.)	12·29 (6)	20·32 (1)	.. (—)	.. (—)	1·45 (2)	.. (—)	.. (—)	19·10 (1)	20·80 (1)	10·2 (0·91)
5 May	.. (N.A.)	442·10 (9)	42·43 (2)	.. (—)	119·30 (4)	1·26 (3)	.. (—)	45·20 (4)	12·40 (2)	30·20 (1)	69·3 (2·08)
6 June	4·83 (N.A.)	40·38 (3)	168·40 (14)	70·10 (4)	.. (—)	.. (—)	31·70 (2)	83·80 (4)	.. (—)	22·80 (4)	42·2 (2·58)
7 July	189·40 (N.A.)	91·68 (5)	33·53 (4)	131·82 (5)	51·00 (4)	1·48 (1)	99·50 (4)	111·70 (9)	17·80 (1)	130·30 (9)	85·8 (3·50)
8 August	91·18 (N.A.)	147·80 (12)	228·10 (11)	34·42 (6)	201·70 (10)	153·70 (6)	39·90 (3)	217·40 (16)	135·55 (10)	133·50 (7)	138·3 (6·75)
9 September ..	66·04 (N.A.)	174·00 (5)	113·40 (11)	101·85 (7)	72·40 (3)	82·30 (5)	187·60 (12)	231·70 (10)	55·50 (6)	74·20 (6)	115·9 (5·41)
10 October	395·20 (13)	132·00 (8)	246·90 (14)	186·69 (13)	196·50 (9)	248·10 (11)	101·10 (8)	161·80 (M)	204·30 (19)	257·00 (9)	212·9 (9·58)
11 November	4·57 (9)	68·45 (6)	237·80 (10)	127·76 (9)	159·10 (5)	394·40 (8)	730·65 (19)	152·60 (9)	121·40 (7)	278·00 (12)	227·5 (7·83)
12 December	143·20 (5)	195·10 (7)	92·24 (6)	111·65 (8)	44·26 (5)	149·60 (5)	.. (—)	134·80 (6)	34·10 (3)	188·30 (9)	109·3 (4·50)
Total ..	1,065·44	1,358·67	1,187·18	764·29	844·85	1,032·96	1,190·45	1,306·46	600·15	1,234·60	10,585·05
		63	74	52	43	42	48	74	49	37	1,058·51

Maximum rainfall during the period—213·36 millimetre on 18th May 1955.

(1) Figures within brackets are number of Rainy days in a month.

(2) (N.A.)—Not available.

II. Cuddalore.

Serial number and name of the month.	1954.	1955.	1956.	1957.	1958.	1959	1960.	1961.	1962.	1963.	Average rainfall.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1 January	132·33 (N.A.)	48·76 (2)	16·76 (4)	.. (—)	1·57 (4)	0·98 (2)	.. (—)	218·40 (8)	.. (—)	119·30 (11)	53·8 (2·58)
2 February	21·59 (N.A.)	.. (—)	0·50 (1)	4·81 (1)	.. (—)	46·40 (1)	.. (—	23·00 (2)	.. (—)	.. (—)	9·6 (0·41)
3 March	178·56 (N.A.)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	93·60 (3)	27·2 (0·25)
4 April	27·43 (N.A.)	91·44 (6)	32·00 (2)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	2·08 (2)	16·3 (0·83)
5 May	4·06 (N.A.)	388·87 (9)	8·67 (2)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	32·00 (5)	29·50 (3)	46·3 (1·58)
6 June	17·93 (N.A.)	32·00 (3)	141·47 (14)	13·97 (3)	.. (—)	.. (—)	40·20 (2)	115·30 (7)	10·00 (4)	29·40 (6)	40·0 (3·25)
7 July	107·21 (N.A.)	133·35 (5)	30·57 (8)	147·57 (4)	.. (—)	4·80 (1)	82·70 (4)	98·70 (13)	77·00 (13)	112·50 (8)	80·1 (4·66)
8 August	146·30 (N.A.)	164·59 (12)	133·60 (17)	35·56 (5)	.. (—)	84·20 (8)	106·00 (64)	341·20 (21)	170·30 (15)	132·90 (8)	131·5 (12·50)
9 September ..	65·63 (N.A.)	28·21 (5)	153·71 (11)	201·67 (8)	137·4 (6)	84·20 (8)	152·90 (13)	120·30 (8)	193·10 (12)	120·40 (5)	125·8 (6·33)
10 October	467·86 (13)	95·50 (8)	299·21 (14)	384·02 (20)	.. (—)	307·60 (14)	92·40 (3)	108·10 (11)	428·20 (23)	186·60 (8)	236·9 (9·50
11 November ..	26·16 (9)	96·52 (6)	448·31 (22)	303·27 (15)	.. (—)	377·40 (11)	980·20 (23)	185·10 (13)	173·80 (9)	578·80 (14)	316·9 (10·16)
12 December	242·82 (5)	255·52 (7)	143·51 (9)	139·42 (3)	9·6 (2)	182·00 (5)	31·30 (4)	.. (—)	65·30 (5)	311·80 (10)	138·1 (4·16)
Total ..	1,437·88	1,334·76	1,414·32	1,230·29	148·57	1,087·58	1,485·70	1,210·10	1,149·70	1,716·88	12,215·78 or 1,221·58
	..	63	104	59	12	50	53	83	84	78	

Maximum Rainfall during the period—242·31 millimetres on 18th May 1955.

Figures within brackets are number of rainy days in a month.

(N.A.)—Not available.

III. Kurunjipadi.

(IN MILLIMETRES).

Serial number and Name of the month. (1)	1954. (2)	1955. (3)	1956. (4)	1957. (5)	1958. (6)	1959. (7)	1960. (8)	1961. (9)	1962. (10)	1963 (11)	Average rainfall. (12)
1 January	93·98 (N.A.)	34·04 (3)	12·70 (2)	.. (—)	.. (—)	.. (—)	61·60 (2)	188·40 (5)	1·60 (1)	146·08 (5)	53·8 (1·50)
2 February	.. (N.A.)	.. (—)	.. (—)	.. (—)	.. (—)	41·90 (2)	.. (—)	.. (—)	4·30 (2)	.. (—)	4·6 (0·33)
3 March	157·48 (N.A.)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	15·8 ..
4 April	2·79 (N.A.)	59·69 (4)	39·62 (2)	.. (—)	.. (—)	.. (—)	7·60 (2)	.. (—)	.. (—)	7·00 (2)	11·7 (0·83)
5 May	10·16 (N.A.)	237·49 (8)	17·76 (2)	57·15 (2)	.. (—)	63·50 (2)	.. (—)	79·80 (4)	8·30 (1)	.. (—)	47·4 (1·75)
6 June	22·60 (N.A.)	13·97 (1)	162·04 (9)	60·70 (4)	.. (—)	.. (—)	50·50 (7)	23·60 (5)	12·00 (2)	31·00 (1)	37·6 (2·41)
7 July	88·80 (N.A.)	164·55 (8)	65·63 (4)	103·38 (6)	69·10 (3)	.. (—)	227·40 (9)	116·20 (6)	76·40 (2)	189·00 (5)	104·9 (3·58)
8 August	62·73 (N.A.)	55·37 (10)	179·07 (9)	95·75 (6)	293·53 (9)	140·20 (8)	108·00 (6)	163·90 (12)	124·30 (8)	144·80 (9)	136·8 (6·41)
9 September ..	60·19 (N.A.)	138·17 (6)	275·08 (12)	20·32 (3)	39·00 (2)	108·59 (7)	157·00 (8)	372·00 (13)	273·80 (9)	132·20 (8)	157·8 (5·66)
10 October	447·04 (10)	161·79 (10)	256·08 (10)	300·99 (14)	191·90 (11)	.. (—)	235·90 (7)	83·30 (8)	294·80 (17)	414·50 (10)	238·6 (8·08)
11 November	66·25 (10)	97·69 (7)	272·54 (9)	247·95 (11)	239·00 (6)	490·10 (12)	842·00 (22)	202·00 (11)	130·10 (6)	586·70 (15)	317·4 (9·08)
12 December	202·69 (5)	228·34 (8)	71·37 (4)	140·71 (3)	34·20 (4)	229·00 (6)	15·90 (3)	244·60 (6)	44·80 (3)	366·40 (6)	157·8 (4·00)
Total ..	1,208·71	1,191·10	1,351·79	1,026·95	867·60	1,073·20	1,705·80	1,474·50	970·40	2,017·68	12,887·78 or 1,288·70
		65	63	49	35	37	66	70	51	61	

Maximum rainfall during the period 22nd October 1954—215·90 Millimetre.

Figures within brackets are number of rainy days in a month.

IV. *Portonovo.*

Number and name of the month.	1954.	1955.	1956.	1957.	1958.	1959	1960.	1961.	1962.	1963.	*Average.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1 January	413·28 (N.A.)	20·57 (3)	51·30 (3)	10·16 (1)	.. (—)	.. (—)	61·60 (2)	153·00 (8)	.. (—)	177·00 (7)	88·7 (2·0)	..
2 February	7·62 (N.A.)	.. (—)	.. (—)	.. (—)	.. (—)	43·20 (1)	.. (—)	.. (—)	5·40 (—)	.. (—)	5·6 (0·16)	..
3 March	156·21 (N.A.)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	15·6 ..	..
4 April	21·84 (N.A.)	71·12 (4)	80·26 (1)	.. (—)	8·10 (2)	.. (—)	21·00 (2)	.. (—)	.. (—)	.. (—)	20·2 (0·75)	..
5 May	8·38 (N.A.)	263·65 (5)	16·25 (2)	11·93 (2)	59·40 (2)	53·30 (2)	.. (—)	31·70 (3)	.. (—)	46·00 (2)	49·1 (1·50)	..
6 June	11·43 (N.A.)	.. (—)	210·57 (9)	.. (—)	.. (—)	18·50 (1)	49·20 (6)	58·40 (9)	3·20 (2)	9·00 (1)	36·1 (2·33)	..
7 July	60·45 (N.A.)	50·54 (7)	35·56 (9)	95·50 (7)	16·50 (2)	19·30 (1)	281·40 (6)	95·00 (5)	46·50 (6)	91·70 (6)	79·3 (4·03)	..
8 August	100·16 (N.A.)	166·11 (8)	28·53 (9)	26·16 (2)	202·50 (11)	79·80 (6)	71·50 (2)	63·40 (9)	106·50 (8)	151·60 (10)	99·6 (5·42)	..
9 September	52·57 (N.A.)	58·42 (3)	374·65 (15)	70·61 (5)	15·00 (1)	118·80 (6)	118·00 (7)	142·70 (8)	156·90 (9)	156·70 (6)	126·4 (5·25)	..
10 October	657·35 (13)	122·17 (6)	227·30 (11)	533·50 (13)	170·10 (11)	315·10 (12)	130·60 (8)	77·60 (5)	323·50 (16)	222·20 (9)	257·9 (8·67)	..
11 November	88·39 (12)	163·32 (7)	280·41 (16)	282·95 (13)	296·20 (8)	365·10 (11)	1,251·40 (17)	287·40 (13)	122·70 (7)	785·70 (16)	392·4 (10·0)	..
12 December	230·88 (7)	255·01 (9)	89·40 (6)	302·00 (11)	63·50 (6)	245·20 (4)	84·00 (5)	243·80 (7)	109·40 (7)	412·60 (9)	203·6 (5·32)	..
Total ..	1,808·56	1,170·91	1,394·23	1,132·81	831·30	1,259·20	2,068·70	1,153·00	874·10	2,052·50	13,745·31 or 1,374·53	..
		55	78	64	43	44	65	67	56	66		

Maximum Rainfall during the period—265·93 m.m. on 22nd October 1954.
Figures within brackets are number of rainy days in a month.

V. Chidambaram.

Number and name of the month. (1)	1954. (2)	1955. (3)	1956. (4)	1957. (5)	1958. (6)	1959. (7)	1960. (8)	1961. (9)	1962. (10)	1963. (11)	Average rainfall. (12)	Remarks. (13)
						(IN MILLIMETRES).						
1 January	206·85 (N.A).	13·32 (2)	18·79 (6)	3·04 (2)	0·57 (3)	17·00 (—)	43·40 (3)	1·35 (7)	4·60 (1)	188·40 (7)	50·2 (2·58)	..
2 February	4·57 (N.A.)	16·00 (1)	2·28 (1)	27·17 (1)	.. (—)	45·00 (3)	2·00 (1)	0·07 (2)	52·40 (N.A.)	.. (—)	14·9 (0·75)	..
3 March	237·99 (N.A.)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (N.A)	109·60 (3)	34·8 (0·25)	..
4 April	26·16 (N.A.)	80·51 (6)	47·75 (2)	.. (—)	18·30 (2)	.. (—)	23·20 (1)	.. (—)	.. (—)	.. (—)	19·6 (0·82)	..
5 May	8·67 (N.A.)	283·21 (11)	2·79 (1)	93·98 (2)	129·00 (4)	47·70 (2)	.. (—)	18·00 (1)	49·80 (5)	.. (—)	63·3 (2·17)	..
6 June	.. (N.A.)	.. (—)	199·96 (11)	39·62 (6)	.. (—)	1·80 (1)	60·12 (4)	0·22 (6)	14·60 (3)	17·10 (2)	33·4 (2·92)	..
7 July	80·26 (N.A.)	117·60 (14)	28·95 (7)	97·79 (12)	23·60 (8)	12·70 (2)	121·09 (6)	150·02 (4)	65·00 (6)	54·30 (4)	75·1 (5·25)	..
8 August	111·50 (N.A.)	117·60 (13)	125·83 (15)	89·91 (9)	115·80 (11)	113·30 (6)	22·05 (4)	87·10 (6)	147·40 (12)	72·70 (8)	100·3 (7·0)	..
9 September	38·07 (N.A.))	67·81 (9)	253·15 (19)	85·84 (7)	11·40 (3)	26·50 (2)	48·87 (16)	151·72 (10)	100·40 (N.A.)	229·10 (9)	101·3 (6·25)	..
10 October	508·50 (14)	126·29 (13)	288·80 (16)	308·35 (20)	255·50 (13)	364·80 (13)	115·90 (8)	186·00 (10)	296·10 (20)	255·10 (9)	270·5 (11·33)	..
11 November	50·58 (12)	117·09 (11)	432·47 (23)	313·43 (19)	263·80 (10)	398·50 (10)	1,076·20 (20)	223·00 (14)	.. (—)	678·20 (14)	355·4 (11·09)	..
12 December	229·61 (10)	451·86 (11)	121·14 (10)	355·34 (12)	84·40 (9)	193·00 (5)	20·00 (1)	243·60 (10)	71·90 (6)	342·50 (8)	211·6 (6·83)	..
Total ..	1,502·98	1,396·29	1,521·86	1,414·47	902·37	1,220·30	1,532·83	1,064·08	802·20	1,947·00	13,304·38 or 1,330·43	..
		91	111	90	63	44	64	70	53	64		

Maximum Rainfall during the period on 22nd October 1954 —233·17 m.m.

Figures witin brackets are number of rainy days in a month.

VI.

Number and name of the month.	1954.	1955.	1956.	1957.	1958.	1959.	1960.	1961.	1962.	1963.	Average rainfall.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1 January ..	44·19 (N.A.)	11·68 (2)	47·75 (2)	.. (—)	0·33 (2)	.. (—)	.. (—)	164·60 (6)	.. (—)	73·60 (5)	24·2 (1·42)	..
2 February	.. (N.A.)	.. (—)	.. (—)	.. (—)	.. (—)	8·60 (2)	.. (—)	.. (—)	.. (—)	.. (—)	0·9 (0·17)	..
3 March	58·92 (N.A.)	.. (—)	.. (—)	.. (—)	0·15 (1)	.. (—)	12·70 (1)	.. (—)	.. (N.A.)	18·30 (1)	9·0 (0·25)	..
4 April	27·17 (N.A.)	50·29 (5)	24·13 (2)	8·89 (1)	34·30 (2)	25·20 (3)	.. (—)	.. (—)	9·02 (1)	55·30 (2)	23·4 (1·33)	..
5 May ..	229·87 (N.A.)	359·91 (10)	109·98 (4)	95·50 (3)	143·20 (5)	33·90 (2)	1·80 (2)	85·00 (4)	82·00 (6)	33·90 (2)	117·5 (3·17)	..
6 June	26·92 (N.A.)	8·37 (2)	160·78 (11).	83·05 (8)	27·90 (1)	20·60 (8)	104·00 (7)	12·60 (3)	18·00 (2)	60·80 (2)	52·3 (3·67)	..
7 July	138·40 (N.A.)	83·09 (7)	20·32 (5)	65·78 (4)	49·20 (5)	2·50 (1)	217·80 (9)	97·00 (6)	82·70 (6)	84·80 (4)	83·9 (3·92)	..
8 August	289·61 (N.A.)	89·15 (8)	191·31 (10)	53·84 (6)	191·90 (10)	.. (—)	161·40 (2)	174·80 (8)	225·40 (15)	137·80 (6)	151·5 (5·42)	..
9 September	45·47 (N.A.)	114·30 (10)	221·48 (13)	108·20 (7)	80·10 (10)	121·40 (10)	110·60 (9)	273·00 (13)	197·90 (7)	176·00 (6)	144·9 (7·08)	..
10 October	491·74 (11)	135·01 (9)	261·39 (15)	431·48 (16)	166·20 (12)	185·00 (12)	155·60 (10)	135·10 (10)	257·10 (23)	354·80 (9)	260·4 (10·75)	..
11 November ..	.. (—)	139·44 (8)	251·46 (17)	119·63 (10)	120·40 (5)	333·00 (10)	612·40 (18)	132·30 (11)	88·90 (5)	322·70 (13)	222·0 (8·08)	..
12 December ..	112·77 (5)	231·39 (8)	42·16 (6)	123·46 (10)	33·60 (6)	126·30 (4)	.. (—)	93·20 (6)	46·00 (3)	152·00 (4)	96·1 (4·33)	..
Total ..	1,463·06	1,252·63	1,330·76	1,089·83	888·58	815·20	1,376·30	1,167·65	1,007·02	1,470·00	11,861·03 or 1,186·10	..
		69	85	67	59	52	58	67	68	54		

Maximum rainfall during the period 18th May 1955—196·08 m.m.

Figures within brackets are number of rainy days in a month.

VII. *Kallakurichi.*

Number and name of the month.	1954.	1955.	1956.	1957.	1958.	1959.	1960.	1961.	1962.	1963.	*Average rainfall.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1 January	52·32 (N.A.)	45·24 (1)	36·57 (4)	.. (—)	0·88 (2)	.. (—)	.. (—)	148·80 (6)	.. (—)	113·00 (8)	30·1 (1·75)	.. ..
2 February	.. (N.A.)	.. (—)	.. (—)	.. (—)	.. (—)	12·8 (2)	.. (—)	.. (—)	.. (N.A.)	.. (—)	1·3 (0·17	.. ..
3 March	44·95 (N.A.)	4·31 (1)	.. (—)	21·08 (—)	0·14 (1)	.. (—)	.. (—)	.. (—)	.. (—)	75·60 (2)	14·6 (0·42)	.. ..
4 April	14·98 (N.A.)	42·41 (4)	16·00 (4)	.. (—)	1·00 (1)	.. (—)	20·80 (2)	.. (—)	88·60 (3)	30·60 (5)	21·4 (1·58)	.. ..
5 May	3·81 (N.A.)	281·68 (14)	25·90 (5)	192·27 (4)	42·30 (8)	51·80 (6)	0·72 (2)	.. (—)	72·00 (11)	71·70 (6)	75·2 (4·67)	.. ..
6 June	37·08 (N.A.)	24·13 (7)	199·64 (10)	44·19 (8)	9·50 (8)	33·70 (13)	40·32 (8)	190·00 (4)	41·40 (2)	77·60 (5)	69·8 (5·42)	.. ..
7 July	171·70 (N.A.)	154·68 (10)	46·69 (10)	50·03 (7)	53·20 (9)	47·20 (5)	161·00 (10)	11·40 (8)	41·00 (5)	.. (—)	73·7 (5·33)	.. ..
8 August	113·79 (N.A.)	146·81 (14)	125·22 (16)	107·08 (12)	62·10 (16)	17·40 (5)	52·40 (4)	142·80 (14)	228·00 (17)	116·20 (8)	111·2 (8·33)	.. ..
9 September	32·02 (N.A.)	119·88 (10)	325·12 (13)	61·72 (9)	171·20 (8)	83·60 (10)	79·40 (9)	343·80 (16)	48·60 (13)	171·20 (8)	143·8 (8·0)	.. ..
10 October	313·18 (15)	94·48 (10)	281·17 (15)	159·00 (13)	116·20 (15)	138·22 (5)	.. (—)	.. (—)	310·80 (19)	331·80 (12)	174·5 (9·50)	.. ..
11 November	.. (—)	60·69 (10)	261·62 (13)	104·64 (15)	72·10 (9)	400·02 (10)	297·10 (19)	95·40 (8)	66·60 (6)	266·60 (14)	162·5 (8·67)	.. ..
12 December	130·55 (9)	160·78 (9)	61·72 (4)	70·86 (9)	24·70 (10)	106·70 (5)	20·80 (4)	.. (—)	.. (—)	182·60 (7)	75·9 (4·75)	.. ..
Total	915·38	1,135·09	1,379·65	810·97	553·32	891·54	672·54	926·20	907·00	1,436·90	9,628·59 or 962·86	.. ..
		90	94	78	87	71	58	56	76	75		

Maximum rainfall during the period 28th November 1959—260·1 m.m.

Figures within brackets are number of rainy days in a month.

VIII. ULUNDURPET.

Number and name of the month.	1954.	1955.	1956.	1957.	1958.	1959.	1960.	1961.	1962.	1963.	Average rainfall.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1 January	53·84 (N.A.)	..	3·55 (2)	.. (—)	1·08 (3)	.. (—)	.. (—)	142·00 (4)	.. (—)	74·70 (5)	27·5 (1·17)	.. ..
2 February	.. (N.A.)	27·17	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	11·00 (1)	.. (—)	.. (—)	3·8 (0·08)	.. ..
3 March	56·38 (N.A.)	..	.. (—)	.. (—)	1·07 (2)	.. (—)	1·18 (1)	.. (—)	.. (—)	45·80 (4)	10·4 (0·58)	.. ..
4 April	14·98 (N.A.)	28·70	2·30 (3)	63·50 (1)	13·02 (1)	29·40 (2)	.. (—)	.. (—)	.. (—)	47·90 (2)	19·9 (0·75)	.. ..
5 May	44·70 (N.A.)	346·96	67·05 (7)	.. (—)	14·50 (1)	60·20 (1)	.. (—)	103·00 (6)	122·03 (6)	73·90 (2)	83·2 (1·92)	.. ..
6 June	34·80 (N.A.)	30·98	138·68 (3)	21·59 (2)	17·80 (1)	74·50 (3)	.. (—)	85·00 (4)	9·00 (1)	.. (—)	41·2 (1·17)	.. ..
7 July	111·76 (N.A.)	143·51	27·94 (8)	24·13 (3)	94·50 (4)	.. (—)	.. (—)	82·20 (4)	26·02 (2)	45·00 (3)	55·6 (2·0)	.. ..
8 August	107·95 (N.A.)	62·23	151·38 (8)	59·43 (5)	250·10 (8)	60·70	50·90 (3)	155·06 (10)	233·00 (10)	91·00 (5)	122·2 (4·42)	.. ..
9 September	75·43 (N.A.)	107·44	176·53 (5)	46·99 (7)	75·20 (4)	121·20	218·00 (8)	220·06 (11)	39·90 (4))	.. (—)	108·1 (3·58)	.. ..
10 October	445·56 (11)	66·54	231·14 (6)	196·85 (12)	213·60 (12)	166·50 (10)	75·00 (7)	141·00 (9)	311·50 (15)	.. (—)	184·8 (3·58)	.. ..
11 November	.. (—)	73·66	188·42 (8)	121·41 (11)	140·60 (5)	504·00 (8)	494·00 (14)	107·90 (7)	88·80 (4)	230·60 (14)	194·9 (5·92)	.. ..
12 December	129·28 (6)	174·49	57·91 (8)	144·62 (6)	16·80 (1)	110·40 (2)	.. (—)	75·50 (6)	.. (—)	131·80 (7)	84·1 (3·0)	.. ..
Total ..	1,074·68	1,061·68	1,044·90	678·52	838·27	1,126·90	839·08	1,122·72	830·25	740·70	935·7	..
			58	47	42	37	33	62	42	42		

Maximum rainfall during the period 28th November 1959—275·4 m.m.

Figures within brackets are number of rainy days in a month.

IX. Tirukoilur.

Number and name of the month.	1954.	1955.	1956.	1957.	1958.	1959.	1960.	1961.	1962.	1963.	Total average.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1 January	66·29 (N.A.)	17·01 (1)	25·65 (3)	.. (—)	0·45 (1)	..	9·00 (2)	111·60 (3)	.. (—)	101·80 (4)	33·2 (1·17)	.. ..
2 February	.. (N.A.)	.. (—)	.. (—)	8·12 (3)	.. (—)	5·80	.. (—)	16·00 (1)	.. (—)	.. (—)	3·0 (0·33)	.. ..
3 March	53·84 (N.A.)	1·32 (1)	.. (—)	.. (—)	0·44 (1)	..	65·04 (N.A.)	.. (—)	.. (—)	66·00 (2)	18·7 (0·33)	.. ..
4 April	9·35 (N.A.)	31·24 (4)	48·51 (2)	.. (—)	.. (—)	.. (—)	10·00 (N.A.)	.. (—)	.. (—)	49·08 (3)	14·8 (0·75)	.. ..
5 May	38·60 (N.A.)	291·84 (10)	68·32 (3)	6·89 (1)	81·30 (7)	90·23	.. (—)	94·11 (8)	69·60 (5)	13·00 (1)	72·4 (2·92)	.. ..
6 June	29·71 (N.A.)	24·13 (6)	98·55 (15)	47·50 (6)	4·10 (3)	42·90	75·24 (7)	42·40 (6)	21·00 (3)	11·60 (3)	39·5 (4·08)	.. ..
7 July	128·52 (N.A.)	244·09 (15)	28·70 (8)	45·97 (6)	24·70 (7)	20·00	97·20 (3)	69·80 (9)	47.00 (6)	184·90 (13)	89·1 (5·58)	.. ..
8 August	244·85 (N.A.)	138·68 (14)	103·48 (12)	46·73 (9)	182·90 (11)	77·18	68·60 (6)	291·40 (17)	215·80 (12)	82·80 (7)	145·2 (7·33)	.. ..
9 September	25·65 (N.A.)	115·31 (10)	279·40 (12)	61·72 (6)	81·30 (7)	185·90	206·20 (15)	316·40 (15)	158·40 (7)	151·70 (10)	158·2 (8·83)	.. ..
10 October	286·00 (18)	192·02 (9)	242·82 (17)	91·94 (13)	184·90 (15)	190·10	119·80 (14)	162·00 (10)	273·00 (14)	269·80 (11)	201·2 (10·17)	.. ..
11 November	11·93 (9)	86·86 (9)	283·21 (15)	141·47 (13)	131·60 (8)	233·60	370·00 (10)	78·20 (6)	50·40 (5)	200·20 (11)	158·7 (7·17)	.. ..
12 December	75·94 (9)	96·52 (8)	77·97 (5)	154·35 (2)	14·20 (6)	81·40	23·00 (3)	26·40 (4)	22·70 (3)	101·00 (7)	67·4 (3·92)	.. ..
Total ..	970·68	1,239·22	1,256·22	604·69	675·89	927·11	1,042·08	1,208·31	857·90	1,231·88	10,014·37 or 1,001·44	..
		87	93	59	66		60	79	55	72		

Maximum rainfall during the period 18th May 1955—150·62 m.m.

Figures within brackets are number of rainy days in a month.

X. SANKARAPURAM.

Number and name of the month.	1954.	1955.	1956.	1957.	1958.	1959.	1960.	1961.	1962.	1963.	*Total average rainfall.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1 January	.. (—)	20·06 (N.A.)	30·98 (2)	..	.. (—)	.. (—)	.. (—)	94.00 (5)	.. (—)	·142·00 (7)	28·7 (1·16)	..
2 February	.. (—)	.. (—)	.. (—)	17.01 (2)	.. (—)	.. (—)	.. (—)	28·00 (1)	.. (—)	.. (—)	4.5 (0·25)	..
3 March	.. (—)	2·54 (1)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	47·00 (N.A.)	83·00 (1)	13·3 (0·16)	..
4 April	.. (—)	84·07 (3)	7·36 (3)	.. (—)	.. (—)	9·60 (2)	52·24 (2)	.. (—)	.. (—)	.. (4)	15·3 (0·83)	..
5 May	.. (—)	165·60 (9)	59·43 (7)	22·35 (1)	58·20 (6)	17·00 (2)	10·10 (2)	73·00 (4)	.. (—)	.. (—)	40·06 (2·58)	..
6 June	.. (—)	5·84 (1)	86·10 (12)	.. (—)	22·30 (1)	.. (—)	11·10 (2)	81·00 (4)	4·00 (1)	.. (—)	21·00 (1·75)	..
7 July	.. (—)	210·56 (15)	8·12 (3)	.. (—)	19·80 (1)	.. (—)	151·40 (8)	50·50 (3)	7·00 (1)	167·00 (7)	61·4 (3·16)	..
8 August	.. (—)	51·81 (10)	103·23 (9)	36·32 (2)	97·30 (7)	65·00 (7)	88·00 (N.A.)	179·00 (9)	116·00 (8)	158·00 (7)	89·5 (4·91)	..
9 September	.. (—)	142·49 (8)	280·16 (12)	34·79 (4)	51·80 (3)	97·20 (11)	113·20 (7)	367·00 (15)	215·00 (11)	119·00 (7)	142·1 (6·5)	..
10 October	.. (—)	151·13 (9)	157·22 (13)	127·76 (10)	.. (—)	185·20 (11)	94·00 (7)	132·00 (8)	201·00 (11)	310·00 (9)	135·8 (6·5)	..
11 November	.. (—)	89·66 (7)	259·00 (11)	64·00 (6)	.. (—)	425·90 (7)	332·60 (14)	104·00 (10)	.. (—)	185·00 (10)	146·0 (5·41)	..
12 December	71·84 (8)	71·88 (7)	132·08 (6)	.. (—)	17·00 (4)	70·60 (3)	31·42 (N.A.)	10·00 (2)	51·00 (3)	..	45·6 (2·75)	..
Total ..	71·84	995·64	1,123·68	302·23	268·40	870·50	884·06	1,118·50	641·00	1,164·00	7,437·85 or 743·79	..
		70	78	27	22	43	36	61	35	48		

Maximum rainfall during this period 29th November 1959—246·4 m.m.

Figures within brackets are number of rainy days in a month.

XI Neyveli

Number and name of the month.	1954.	1955.	1956.	1957.	1958.	1959.	1960.	1961.	1962.	1963.	*Average rainfall.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1 January	D.N.A. (—)	52·6 (2)	11·0 (3)	.. (—)	5·8 (2)	0·6 (2)	0·8 (1)	181·1 (8)	8·7 (1)	72·7 (5)	33·3 (2·0)	..
2 February	D.N.A. (—)	.. (—)	.. (—)	3·1 (2)	.. (—)	12·4 (1)	.. (—)	7·4 (1)	2·6 (3)	.. (—)	2·6 (0·50)	..
3 March	59·7 (3)	.. (—)	.. (—)	.. (—)	.. (—)	.. (—)	4·8 (1)	.. (—)	.. (—)	29·5 (3)	9·4 (0·58)	..
4 April	15·6 (3)	33·9 (5)	63·8 (3)	.. (—)	17·0 (1)	52·5 (3)	14·7 (2)	8·9 (1)	28·2 (4)	31·0 (5)	26·6 (2·25)	..
5 May	2·8 (1)	191·0 (8)	8·9 (4)	92·5 (4)	59·7 (7)	41·6 (4)	5·1 (3)	58·7 (6)	132·7 (8)	19·4 (3)	61·2 (4·00)	..
6 June	34·6 (3)	36·3 (4)	144·00 (10)	55·3 (9)	9·7 (4)	16·3 (11)	73·8 (10)	34·8 (9)	13·8 (5)	29·8 (7)	44·8 (60)	..
7 July	121·3 (13)	130·3 (13)	40·4 (8)	52·5 (9)	32·7 (8)	12·7 (5)	211·1 (12)	67·9 (9)	48·3 (7)	109·6 (9)	82·7 (7·75)	..
8 August	135·4 (11)	49·8 (15)	173·2 (15)	87·7 (14)	166·1 (14)	41·4 (15)	92·2 (17)	192·1 (16)	205·6 (17)	124·3 (17)	126·8 (11·58)	..
9 September	50·0 (4)	68·8 (11)	201·2 (15)	93·5 (10)	77·6 (9)	161·9 (15)	148·7 (12)	108·5 (15)	181·0 (15)	173·6 (15)	127·3 (10·50)	..
10 October	59·4 (4)	161·5 (14)	280·9 (15)	310·0 (17)	178·3 (18)	291·7 (19)	212·1 (13)	179·1 (12)	222·2 (24)	344·2 (13)	223·9 (12·42)	..
11 November	49·3 (3)	185·7 (8)	229·1 (13)	137·9 (14)	183·9 (9)	483·7 (15)	645·3 (23)	188·1 (15)	104·5 (10)	255·4 (18)	246·2 (10·67)	..
12 December	.. (—)	125·2 (7)	86·4 (6)	182·2 (12)	25·8 (10)	111·6 (6)	11·0 (4)	91·6 (5)	17·8 (3)	159·5 (12)	81·1 (5·42)	..
Total ..	528·1	1,035·1	1,238·9	1,019·2	756·6	1,226·4	1,419·6	1,118·2	965·4	1,352·0	1,065·9	..
	45	87	92	90	82	94	88	97	97	107	106·6	..

Maximum rainfall on 28th November 1959—196·0 m.m.
Figures within brackets are number of rainy days in a month.

APPENDIX II.

BOUNDARY DESCRIPTION OF THE CUDDALORE SOUTB DIVISION.

North.—Starting from the trijunction of Salem, North Arcot and South Arcot districts, the boundary runs eastwards along the northern boundary of South Arcot district to the point where Pavunjipattu Reserved Forest meets; thence it runs along the southern side of Pavunjipattu Reserved Forest till it meets the Perungulathur–Sankarapuram road; thence southwards along, the said road till it meets the northern boundary of Kaduvanur Reserved Forest, thence along the north, west, south and east sides of Kaduvanur Reserved Forest till it meets the Sankarapuram–Tirukoilur road; thence along said road till it meets the Kallakurichi taluk boundary; thence southwards along the taluk boundary till it mets Aviriyur Reserved Forest; thence along the north west, south and east sides of the said Reserved Forest till it mets the Tiruvannamalai–Tyagadurgam road; thence along the said road to Tyagadurgam; thence eastwards along the Kallakurichi–Ulundurpet road to Ulundurpet; thence north-eastwards along the Ulundurpet-Villupuram road (National Highways) to Villupuram; thence eastwards along the Villupuram–Pondicherry road to Pondicherry.

East.—Thence the boundary runs south along the coast of Bay of Bengal up to the South Arcot district boundary.

South and west.—Thence the boundary runs all along the South Arcot district boundary up to the starting point.

NOTE.—The two unreserved lands Sirupakkam and Pandur are situated outside the boundary limits adjoining the division.

APPENDIX III.

List of Forests with area, G.O. dates of Reservation, Etc.

A. Reserved Forests.

Serial number and name of the reserved forest.	*Block number.*	*Area in Hectares (acres).*	*Taluk.*	*Board proceedings and Government Order.*
(1)	(2)	(3)	(4)	(5)
I. Panruti Range.				
1 Kangiruppu Bit I. R.F. Class III Forest.	43	1196·25 (2956·00 Ac.)	Cuddalore	Board's 604 of 30th September 1890 and G.O. No. 684, 684A Revenue of 22nd September 1890.
2 Kangiruppu Bit II R.F. Class III Forest.	44	1043·68 (2579·0 Ac.)	Do.	Board's 488 of 23rd November 1891 and G.O. No. 980-981-A Revenue of 15th October 1891.
3 Killai R. F. Class III Forest.	142	258·19 (638·0 Ac.)	Chidambaram ..	Board's 546 of 5th October 1892 and G.O. 965–965 A Revenue of 13th September 1892.
4 Pichavaram	143	1007·26 (2489·0 Ac.)	Do.	Board's 98 of 11th February 1893 andG.O. No. 38–38-A of 16th January 1893.
4A Pichavaram Extension R.F. Class III Forest.	216	92·27 (228·0 Ac.)	Do.	Board's 430 of 1st October 1897 and G.O. No. 795–795-A of 17th September 1897.
II. Vriddhachalam Range.				
5 Ammeri R.F. Class III Forest.	127	349·24 (863·0 Ac.)	Vriddhachalam	Board's 365 of 25th September 1895 and G.O. No. 318–318-A of 21st April 1893.
6 Narimanam R. F. Class III Forest.	134	375·55 (928·0 Ac.)	Do.	Board's 699 of 23rd December 1895 and G.O. No. 771–771-A Revenue of 27th November 1895.
7 Semakottai R. F. Class III Forest.	126	2458·46 (6075·0 Ac.)	Do. ..	Board's 430 of 2nd July 1894 and G.O. No. 557–557-A of 31st July 1894.
7A Semakottai Extension R. F. Class III Forest.	190	73·65 (182·0 Ac.)	Do.	Board's 589 7th October 1895 and G.O. No. 610–610-A of 5th September 1895.
8 Velangulam R. F. Class III Forest.	136	277·46 (685·62 Ac.)	Do. ..	Board's 166 of 13th April 1896 and G.O. No.131–131A of 20th March 1896.
III. Ulundurpet Range.				
9 Alwarmalai R. F. Class III Forest.	78	3559·20 (8795·0 Ac.)	Tirukoilur	Board's 210 of 21st March 1893 and G.O. No 192–192-A of 27th February 1893.
10 Krishnapuram R.F. Class III Forest.	118	2445·91 (6044·0 Ac).	Vriddhachalam	Board's 339 of 13th August 1893 and G.O. No 306—306-A of 20th April 1893.
11 Kattumailur R. F. Class III Forest.	120	522·04 (1290·0 Ac).	Do.	Board's 572 of 18th October 1892 and G.O. No. 1004—1004-A of 23rd September 1892.
11A Kattumailur Extension R.F. Class III Forest.	223	196·27 (485·0 Ac).	Do.	Board's 420 of 4th October 1898 an G.O. No.526—526-A of 14th September 1898.
12 Kottalamalai R.F. Class III Forest.	156	1138·78 (2814·0 Ac.)	Kallakurichy	Board's 396 of 23rd July 1892 and G.O. No. 646—646-A of 22nd June 1892.
13 Kuttady R.F. Class III Forest.	81	687·96 (1700·0 Ac).	Tirukoilur	Board's 446 of 30th October 1891 and G.O. No. 862—862-A of 11th September 1891.
14 Kallamedu R.F. Class III Forest.	117	416·83 (1030·0 Ac).	Do.	Board's 22 of 17th January 1896 and G.O. No. 487—487-A of 24th July 1895.
15 Magarur R.F. Class III Forest.	161	511·12 (1263·0 Ac).	Kallakurichi	Board's 22 of 17th January 1896 and G.O. No. 825—825-A of 23rd September 1892.
16 Mangur R.F. Class III Forest.	119	685·54 (1694·0 Ac).	Vriddhachalam	Board's 572 of 18th October 1892 and G.O. No. 1000—1004-A of 23rd September 1892.

APPENDIX III—*cont.*

LIST OF FORESTS WITH AREAS, G.O. DATES OF RESERVATION-ETC.—*cont.*

A. Reserved Forests—cont.

Serial number and name of the reserved forest. (1)	*Block number.* (2)	*Area in Hectares (acres).* (3)	*Taluk.* (4)	*Board Proceedings and Government Order.* (5)
		III. ULUNDURPET RANGE *cont.*—		
17 Porasakurichy Class III Forest.	159	333·06 (823·0 Ac).	Vriddhachalam	Board's 625 of 9th October 1894 and G.O. No. 642—642-A of 1st September 1894.
18 Thottapadi R.F. Class III Forest.	214	585·98 (1448·0 Ac).	Do.	Board's 365 of 25th August 1897 and G.O. No. 673—673-A of 4th August 1897.
19 Varanjaram R.F. Class III Forest.	160	353·69 (874·0 Ac).	Vriddhachalam and Kallakurichy.	Board's 637 of 11th November 1895 and G.O. No. 691—691-A of 22nd October 1895.
		IV. KALLAKURICHI RANGE.		
20 Kanai R.F. Class I Foest.	151	696·38 (1720·80 Ac).	Kallakurichi	Board's 370 of 15th July 1892 and G.O. No. 597—597-A of 10th June 1892.
21 Puttai R.F. Class I Forest.	194	412·37 (1019·0 Ac).	Do.	Board's 541 of 6th September 1895 and G.O. No. 548—548-A of 13th August 1895.
22 Pari Gam R.F. Class I Forest.	205	520·51 (1286·20 Ac.)	Do.	Board's 118 of 9th March 1890 and G.O No. 80—80-A of 18th February 1896.
23 Rangappanur R.F. Class I Forest.	152	936·46 (2314·06 Ac.)	Do.	Board's 553of 11—10 1892 and October G.O. No. 962—962-A of 12th Septe,ber 1892.
24 Takarai R.F. Class I Forest.	150	4452·18 (11001·60 Ac).	Do.	Board's 851 of 13th June 1896 and G.O. No. 337—337-A of 3rd January 1896.
25 Mallapuram R.F. Class I Forest.	150	407·92 (100·80 Ac).	Do.	Board's 361 of 9th July 1892 and G.O. No. 898—868A of 10th June 1892.
26 Malpalangur R.F. Class III Forest.	209	1319·27 (3260·00 Ac.)	Do.	Board's 488 of 13th November 1897 and G.O. 894—894A for 28th November 1897.
27 Poosapadi R.F. Class III Forest.	213	654-38 (16170·Ac).	Do.	Board's 303 of 22nd July 1897 and G.O No. 277—277A of 14th June 1897.

APPENDIX III—*cont.*

List of Forests with areas, G.O. dates of Reservation—*cont.*

A. Reserved Forests—cont.

Serial number and name of the R.F. (1)	*Date of reservation.* (6)	*Reference to Fort St. George Gazette.* (7)	*Date of taking over from panchayats.* (8)	*Government Order.* (9)	*Remarks.* (10)
I. Panruti Range.					
1 **Kangiruppu** Bit I R.F. **Class III** Forest.	15th November 1890.	Page 644 of 26th August 1890.	24th June 1949. ..	No. 1784 Dev. of 2nd April 1949.	—
2 **Kangiruppu** Bit II R.F. **Class III** Forest.	31st December 1891.	Page 1049 of 20th October 1891.	Do. ..	Do.	—
3 **Killai R.F.** Class III Forest.	15th December 1892.	Page 1203 of 20th September 1892.	30th August 1945.	No. 2292 Dev. of 13th June 1945.	—
4 Pichavaram	1st May 1893 ..	Not available	Do.	Do.	—
4A Pichavaram Extension R.F. Class III Forest.	15th December 1897.	Page 79 of 28th September 1897.	Do.	Do.	—
II. Vriddhachalam Range.					
5 Ammeri R.F. Class III Forest.	1st August 1893 ..	Page 475 of 2nd May 1892.	12th July 1949 ..	No. 1784 Dev. of 2nd April 1949.	—
6 Narimanam R.F. Class III Forest.	1st February 1896	Not available.	4th September 1949.	Do.	—
7 Semakottai R.F. Class III Forest.	15th November 1894.	Page 936 of 9th August 1894.	12th July 1949 ..	Do.	..
7A Semakottai Extension R.F. Class III Forest.	1st December 1895.	Not available.	Do.	Do.	..
8 Velangulam R.F. Class III Forest.	30th June 1896 ..	Page 402 of 24th August 1896.	Do. ..	Do.	..
III. Ulundurpet Range.					
9 Alwarmalai R.F. Class III Forest.	15th June 1893 ..	Page 303 of 7th March 1893.	21st June 1949 ..	No. 1784 Dev. of 2nd April 1949.	—
10 Krishnapuram R.F. Class III Forest.	Not available.	Page 461 of 25th April 1893.	28th October 1949.	Do.	..
11 Kattumailur R.F. Class III Forest.	Do.	Page 1241 of 4th October 1892.	7th July 1949 ..	Do.	—
11A Kattumailur Extension R.F Class III Forest.	15th November 1898.	Page 884 of 20th September 1898.	Do.	Do.	..
12 Kottalamalai R.F. Class III Forest.	1st October 1892. ..	Page 823 of 28th June 1892.	5th November 1949.	Do.	..
13 Kuttady R.F. Class III Forest.	15th December 1891.	Not available	Do.	Do.	—
14 Kallamedu R.F. Class III Forest.	1st October 1895. ..	Do. ..	23rd June 1949 ..	Do.	..
15 Magarur R.F. Class III Forest.	1st March 1896 ..	Page 17/1896 Part I of 7th January 1893.	15th June 1949 ..	Do.	..
16 Mangur R.F. Class III Forest.	Not available.	Not available ..	12th July 1949 ..	Do.	—
17 Porasakurichy Class III Forest.	1st September 1894.	Page 1078 of 11th September 1894.	5th November 1949.	Do.	—
18 Thottapadi R.F. Class III Forest.	30th November 1897.	Page 1025 of 10th August 1897.	Do.	Do.	—
19 Varanjaram R.F. Class III Forest.	1st January 1896 ..	Page 1215/Part I of 29th October 1895.	Do.	Do.	—

APPENDIX III—*cont.*

LIST OF FORESTS WITH AREAS, G.O. DATES OF RESERVATION—*cont.*

A. Reserved Forests—cont.

Serial number and name of the R.F.	*Date of reservation.*	*Reference to Fort St. George Gazette.*	*Date of taking over from panchayats.*	*Government Order.*	*Remarks.*
(1)	(6)	(7)	(8)	(9)	(10)
IV. KALLAKURICHI RANGE.					
20 Kanai R.F. Class I Forest ..	15th September 1892.	Page 750 of 14th June 1892.	Nil.	Nol.	..
21 Puttai R.F. Class I Forest ..	15th October 1895.	Page of 25th February 1896.	Nil.	Nil.	..
22 Pari Gam R.F. Class I Forest.	15th April 1896 ..	Page 250 of 25th February 1896.	Nil.	Nil.	..
23 Rangappanur R.F. Class I Forest.	1st January 1893 ..	Pages 1201, 1202 of 20th September 1892.	Nil.	Nil.	..
24 Takarai R.F. Class I Forest.	15th October 1896.	Pages 829, 830 and 831 of 7th January 1896.	Nil.	Nil.	..
25 Mallapuram R.F. Class I Forest.	15th September 1892.	Not available	Not available.	Not available.	..
26 Malapalngur R.F. Class III Forest.	31st January 1898 ..	Do.	Do.	Do.	..
27 Poosapadai R.F. Class III Forest.	31st August 1897. ..	Do.	Do.	Do.	..

NOTE—The rights of way, etc., are given in appendix........

APPENDIX

(*Vide* paragraph).

RESERVED FORESTS DISRESERVED IN CUDDALORE SOUTH DIVISION DURING THE PREVIOUS WORKING PLAN PERIOD FOR THE NEYVELI LIGNITE CORPORATION.

Serial number and Name of the R.F.	*Block number.*	*Area in hectares and in acres.*	*Taluk.*	*Original notification.*	*Disreservation orders of the Government.*	*Notification number.*	*Handed over on*	*Taken backed on*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1 Edaikal, R.F. ..	80	1371·88 (1371·88 Ac.)	Thirukoilur.	No. 211, dated 10th May 1892, *Vide* page 650 of Part I, dated 17th May 1892.	G.O. Ms. No. 3468, A. 7399 of 1957.	S.R.O. No. A7399 of 1957.	29th August 1957.	....
2 Kuthakudi R.F. ..	207	524·07 (1295·0Ac.)	Kallakurichi.	G.O. No. 141, dated 15th March 1896, *Vide* page 401 of Part I, dated 24th March 1896.	G.O. Ms. No. 947, Food and Agriculture, dated 8th March 1958.	S.R.O. No. A. 2260 of 1958.	24th December 1957.	On 25th July 1962, *Vide* Government Order 41194-D-11/62-63, Food and Agriculture, dated 11th April 1962.
3 Karmangudi R.F. ..	124	445·15 (1100·0 Ac.)	Vridhachalam.	No. 221, dated 27th April 1893 published at page 501 of Part I, dated 9th May 1893.	G.O. Ms. No. 947, Food and Agriculture, dated 8th March 1958.	S.R.O. No. A 2259 of 1958.	23rd December 1957.	....
4 Kuppanatham R. F.	128	314·44 (777·0 Ac.)	Do.	No. 431, dated 7th October 1892, *Vide* page 1180 of Part I, dated 13th October 1892.	G.O. Ms. No. 3468, Food and Agricultrue, dated 14th November 1937 *Vide* page No. 2155, Part I, dated 4th December 1957.	S.R.O. No. A-7396 of 1957.	1st April 1957.	....
5 Parur R.F. and Extension R.F.	125 } 188 }	1239·95 (3064·0 Ac.)	Do.	G.O. Ms. No. 563, dated 28th November 1892 and 1596, dated 16th December 1992 *Vide* page 609, dated 15th November 1895 and 1309, dated 19th November 1895.	Do.	S.R.O. No. 7397 of 1957 and 7398 of 1957.	28th August 1957.	....
6 Pandur R. F. ..	82	384·86 (951·0 Ac.)	Tirukoilur ..	G.O. No. 106, dated 11th March 1892, published in *Fort St. George, Part* I, page 204—295, dated 15th March 1892.	Do.	S.R.O. No. A 7400 of 1957.	10th January 1958.	Taken back from Neyveli Lignite Corporation on 25th July 1962 *Vide* Government order 41194, dated 11/62 Food and Agriculture, dated 11th April 1962.

7 Sirappakam R.F. ..	79	437·06 (1080·0 Ac.)	Do.	No. 256, dated 10th June 1892, *vide* page 739 of Part I, dated 14th June 1892.	Do.	S.R.O. No. A. 7401 of 1957.	Do.	Do.
Velangulam R.F. ..	136	575·38	Vriddachalam.	No. 166 of 13th April 1896 and G.O. No. 131, 131-A dated 20th March 1896.	G.O. Ms. No. 981, Food and Agriculture of 24th March 1964—II-1, No. 1704 of 1964, *Vide* page 654 of Part II—section 1 of *Fort St. George Gazette* of 15th April 1964.	....	..	....

B. RESERVED LANDS.

Serial number and name.	*Area in Hectares. (Acres).*	*Taluk.*	*Notification.*	*Remarks.*
(1)	(2)	(3)	(5)	(5)
		Ulundurpet Range.		
1 Alwarmalai Addition I Block ..	6·41 (15·85 Ac.).	Tirukoilur ..	G.O. Ms. No. 3921, Food and Agriculture of 15th November 1961.	....

Other Ranges.

Nil.

C. UNRESERVED LANDS.

Serial number and name.	Area in hectares (Acres).	Taluk.	Government order.	Date from which under the control of the Department.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)
			I. Panruti Range.		
1 Ariyakoshti	33·18 (82·0 acres)	Chidambaram	G.O. No. 2292 of 13th June 1945	21st July 1946	....
2 Portonovo	17·00 (42·0 acres).	Do.	Do.	Do.	....
3 Thiruthuraiyur	32·37 (80·0 acres).	Cuddalore	G.O. No. 3361, Development of 2nd September 1946.	From 1946	....
			II. Vriddachalam Range.		
Kattayanallur	178·06 (440·0 acres).	Vriddachalam	Not available	Not available	....
			III. Ulundurpet Range.		
Iruvelpet	16·19 (40·0 acres).	Tirukoilur	G.O. No. 3361, Development of 2nd September 1946.	From 1946	....
Kuthakudi	524·7 (1295·0 acres).	Kallakurichi	Government Memo. No. 41194-D-II/62-63, Food and Agriculture of 11th April 1962 and Chief Conservator's No. 15861/62-G, dated 13th April 1962.	25th July 1962	....
Pandur	384·86 (951·0 acres).	Thirukoilur	Do.	Do.	....
Siruppakkam	437·06 (1080·0 acres.)	Do.	Do.	Do.	
			IV. Kallakurichi Range.		
			Nil.		

APPENDIX IV (*Vide Paragraph*).

RIGHTS OF WAY, ETC., ADMITTED IN RESERVE FOREST IN CUDDALORE SOUTH DIVISION.

1. *Kangiruppu Bit* I.

I. Right or way over the undermentioned pattas is admitted for men, cattle and carts, paths Nos. (1) to (3) are not exceeding eleven yards width and Nos. (4) to (7), six yards in width.—

(1) Cart-track from semmedu to Adarikuppam hamlet of Meliruppu. It enters the block at survey No. 282 runs southward for one mile and one furlong and leaves it at survey No. 464 both of Karikkai village.

(2) Cart-track from Kallanatham Paracheri to path No. 1 above. It enters the block a furlong and a half cast of Cairn No. 1 and runs southward for six furlong of it.

(3) Cart-track from Visur to Meliruppu and Kiliruppu. It enters the block at Survey No. 601 of Visur runs eastward for nearly two miles and a quarter in the block and leaves it at survey No. 180 of Meliruppu village.

(4) Cart-track from Meliruppu to Adarikuppam. It enters the block south of survey No. 180, runs southward for about three furlongs in it and leaves it at the north-east corner of survey No. 285 both of Meliruppu.

(5) Cart-track from Reddipalayam to Puluvankuppam. It enters the block at Survey No. 755 of Visur village passes Kallemettu vigneswarara kolam (taonk) south ward for a mile and five furlongs in the block and leaves it at survey No. 265 of Virasingamkuppam village.

(6) Cart-track Reddipalayam to Thandrayanpettai. It branches from path No. 5 south of Kallemettu vigneswarar kolam (tank), runs south-east for a mile in the block and leaves it at survey No. 22 Virasingamkuppam village.

(7) Cart-track from Nannikuppam to Elavathadi. It enters the block south of Othiadi viravur koil temple, runs for two furlongs in the block and leaves it at the west corner of survey No. 819 of Visur village.

II. Kallemettu–Vigneswarakoil (temple) situated on the western bank of Kallemettu Vigneswara kolam (tank). There is no building but a stone idol is kept under a tree. The temple is demarcated out of the block with a space of half a kani around it and with access allowed to it by a path from path No. 5.

III. The right to use the water of the Vigneswarakolam referred to in II Supra, for the purpose of cooking at the time of worship is also admitted.

IV. The undermentioned inam lands of Vinur village are kept as enclosures within the block free from reservation and with access by paths Nos. 5 and 3 respectively.

	Extent. Kanis.	A.	P.
Survey No. 829	4	0	0
Survey No. 831..	5	3	2
Total ..	9	3	2

V. *Additional rights of way sanctioned.*—A road to width of 36 feet concerting Sendanadu Road and Kudiyiruppu village (via) Visur through Kangiruppu Reserved Forests Bit I as per No. 10411-62 D, dated 1st December 1962 of District Forest Officer, Cuddalore South Division.

2. *Kangirippu Reserved Forests Bit II.*

I. Right of way is allowed for men, cattle and carts over the undermentioned paths within the reserve, each to a width of six yards.—

1. Cart-track from Melkangayankuppam to Thandrayanpettai entering the forest at the western side of survey No. 89 of Kilkangayankuppam, running north-west for about nine furlongs and leaves it at cairn No. 1.

2. Cart-track from Nadukuppam to its hamlet Mottukuppam, enters the forest at the northern side survey No. 152 and running northwards for about four furlongs leaves it at the southren side of survey No. 20 both of Nadukuppam village.

3. Cart-track from Kilkangayankuppam to Kudiyiruppu, enters the forest at the northern side of survey No. 66 and running westwards and north-westwards for about four furlongs leaves it at the southern side of Survey No. 58 both of Kilkangayankuppam.

4. Path from Kudiyiruppu to Melkangayankuppam, passing along the forest boundary from the north -eastern corner of survey No. 84 of Kilkangayankuppam till it joins path No. 3.

5. Path from Porperiyankuppam to its hamlet Athirikuppam, enters the forest at the western side of survey No. 5 and running northwards for about one and three eight mile leaves it at cairn No. 4 (SEE NOTE BELOW).

6. Path from Porperiankuppam to Panruti running for about two and a half furlongs in Porperiankuppam abcut one and a half furlongs in Vellam and one furlong in Nadukuppam enters the forest at the north-westehn corner of survey No. 67 of Porperiankuppam and leaves it at the western side of survey No. 48 and finally leaves it at the western side of survey No. 53 all of Narukuppam village

7. Path from Vallam to Kiliruppu, enters the forest at the northside of survey No. 63 of Vallam first bit and running in a northernly direction for about two and a half furlongs leaves it at the southern side of survey No. 39 of the same village.

8. Path from Vallam 1st bit to Athirikuppam hamlet to Porperiyankuppam, branches from path No. 7 about a chain north-west of the north-western corner of survey No. 59 of Vallam 1st bit and running north-westwards for about a mile and three and a half furlongs leaves the forest at the south-eastern corner of survey No. 39 of Kilkangayan-kuppam.

9. Path from Thandrayanpettai to Puliankuppam, entering the forest at the south-western corner of survey No. 322 of Virasingankuppam, running south-westwards for about 3 furlongs and leaving it at north-eastern corner of survey No. 313 of the same village.

10. Path from Pulavankuppam to Virasingankuppam entering the forest at the south-western corner of survey No. 286, running south-eastwards for about eight and a half furlongs and leaving it at the north-west corner of survey No. 155 of Virasingan-kuppam.

11. Branch path from No. 10 at Katayankulam to Nampuriankuppam hamlet of Virasingankuppam. It goes southwards for about a furlongs and leaves the forest at the north side of survey No. 80 of Virasingankuppam.

12. Path from Nampuriankuppam to Kallamedu; entering the forest at the western side of Survey No. 80 running north-westwards for about a mile and leaving it at the eastern side of survey No. 190 both of Virasingankuppam.

II. A right of way to Munianarcovil branching from path No. 1 (2) about four chains south of the south-east corner of survey No. 45 of Nadukuppam, running north-westwards for about nine chains and leaving the forest about two chains west of the south-west corner of the said field. It is three yards broad and open for men only.

III. In favour of the holders of fields Nos. 307 and 308 and these adjoining them of Virasingankuppam, right to the water of the ond Siluvaipallamkuttai is admitted for use by cattle. It is approached from field No. 306 of the said village across the forest boundary.

IV. The following patta lands are excluded from reservation and retained as enclosures within the forest :—

Name of village.	*Survey number.*	*Extension.*	*Remarks.*
		CAWNIES.	
(a) Vallam 1st bit	43 44 45	3·02 4·10·3 0·12·1	These three fields form a single enclosure. Field No. 45 is approached by a path branching from path No. 1 (7) about ten chains north of its entrance and running westwards three yards broad and open for men and cattle. Field No. 43 is approached by a path branching from path No. 1 (8) about nine and a half chains from the point of its branching from path No. 1 (7) and running south three yards broad and open for men and cattle. Access to field No. 44 is by the path allowed to field No. 45 supra.
(b) Porperiankuppam	38 39	7·7·0 0·6·0	Approached by a path branching from path No. 1 (6) about seven and a half chains north-east of the north-west corner Survey No. 67 of Porperiankuppam and running north-west, three yards broad and open for people and cattle.
(c) Virasingankuppam	319	7·2·3	Approached by a path running northwards from the north-east corner of Survey No. 307 of Virasingankuppam village, three yards broad and open for men and cattle.
(d) Virasingankuppam	318	5·4·1	Approached by a path running eastwards from the north-east corner of survey No. 316 of Virasingankuppam, three yards broad and open for men and cattle.
(e) Virasinganuppam	180	3·15·2	Approached by path No. 1 (11).
(f) Virasingankuppam	181 182	1·9·3 1·9·0	Approched by a path branching from path No. 1 (12) about three and a half chains from the point of its entrance on the southern boundary and running south-westwards, three yards broad and open for men and cattle.

NOTE.—The Chief Conservator of Forests, Madras in his Order No. 55115/64/G-2, dated 7th December 1964 extinguished the existing right of way No. 5 under section 20, Madras Forest Act of 1882.

V. *Additional right of way sanctioned.*—(1) The village road from Porperiyankuppam to Athirikuppam, is open to a width of 55 links for people, cattle and vehicles for a distance of 11,535 links though Kangiruppu Reserved Forest Bit II subject to the condition that the right of way hereby granted shall be liable for cancellation at the diecretion of the Chief Conservator of Forests, Madras in the case of misuse or for other reasons—*Vide* Chief Conservator's Proceedings No. Mis/156/64, dated 12th August 1964.

(2) A road to a width of 36 feet connecting Nadukuppam and Kudiyiruppu village (via) 1959 and 1960 Cashew Plantations in Kangiruppu Reserved Forest Bit II as per No. 2939/63 D, dated 17th September 1963 of District Forest Officer, Cuddalore South Division.

(3) A road to a width of 36 feet from Kilkanganikuppam to Kudiyiruppu village and to Annakarankuppam village through Kangiruppu Reserved Forest Bit II as per No. 9182/63 D, dated 4th December 1963 of the District Forest Officer, Cuddalore South Division.

3. KILLAI RESERVED FOREST.

I. Cart-track branching from the Chidambaram-Portonovo road to the Bay of Bengal has been admitted and recorded within the block. It enters the forest immediately north of the north-east corner of Survey No. 146 of Killai and running north-easterly for about seventy-three chains, leaves it on the sea-shore at a point thirteen chains north-east of the third boundary stone south of Vellar river on the east side of the Killar village. It will be open for people, cattle and carts to a width of twelve yards.

II. Seven acres in Survey No. 70 of Killai has been excluded from reservation and left as an enclosure. It is to be approached by a path running from the north east corner of Survey No. 163, in an easterly direction for 13 chains to the north-west corner of Survey No. 70. The path will be open for men and cattle to a width of four feet.

4. PICHAVARAM RESERVED FOREST.

Survey No. 130 (acres 8.50) of Tandavarayan Solagampattai has been excluded from reservation and left as an enclosure with access by a path four feet wide and open for people and cattle and entering the foest at a point two and a half chains north of the north-east corner of Survey No. 122 of Thandavarayan Solaganpettai and running northerly to a distance of fifteen chains in the block to the south corner of survey No. 130.

4. (a) PICHAVARAM EXTENSION RESERVED FOREST.

The undermentioned right of way is allowed within the block :—

Path from Thandavarayan Solaganpettai and running northwards for about twenty-four chains within the block, leaves it about chains west of the cairn at its north-east corner.

5. AMMERI RESERVED FOREST.

I. The following cart-tracks have been admitted and recorded. They will be open for people, cattle and carts to a width of four yards :—

(1) From Mudanai to Vadakuvellur. It enters the forest at the north-west corner of Survey No. 410 of Madanai and running easterly leaves the block about five chains south of Survey No. 758 of Ammeri.

(2) From Mudanai to Melkuppam (via) Mukkankuttai. It enters the reserve two chains north of the south-east corner of Survey No. 293 of Mudanai and running north-easterly for about five and a half furlongs leaves it at cairn No. 5.

(3) From Mudanai to Periakappankulam. It enters the reserve on the east side of Survey No. 293 of Mudanai and running northwards for about nine furlongs leaves it two and a half chains south-east of the south-west corner of Survey No. 452 of Periakappankulam.

II. The righht to the water of the Mukkankuttai with access by right of way No. 2 has been admitted and recorded in favour of the villagers of Mudanai.

6. NARIMANAM RESERVED FOREST.

I. Right of way over the undermentioned cart-tracks and foot-paths is admitted, Nos. (1) to (3) for men, cattle and carts each to a width of four yards and Nos. (4) and (5) for men and cattle each to a width of four feet :—

(1) Cart-track from Vridhachalam to Mudanai. It enters the reserve about chain north of the south-east corner of Survey No. 117 of Kuppanattam, runs east for about half a mile and quits it at the south-west corner of Survey No. 134 of Narimanam.

(2) Cart-track from Narimanam to Mudanai. It enters the reserve at the south-east corner of Survey No. 162 of Mariamman, runs east for about two furlongs and quits it about a furlong west of Komuttikuttai.

(3) Cart-track from Mangalam to Narimanam. It enters the reserve at the south-east corner of survey No. 794 runs ,west and North-west for about half a furlong and quits it east of the south-west corner of Survey No. 747 both of Mudanai.

4. Foot path from Kuppanattam to Agaram. It enters the reserve about two chains east of the south-east corner of survey No. 110 of Kuppanattam, runs east for about a mile and quits it in survey No. 22 of the same village about three quarter furlong west of its north-east corner.

5. Foot path from Kuppanatham to Mudanai. It enters the reserve about two chains east of the south-east corner of Survey No. 110 of Kuppanattam, runs north-east for about six furlongs and quits it cast of the south-east corner of Survey No. 134 of Narimanam.

II. Right of way for men only to a width of four feet over the path from Agaram to the shrine of Viravar koil situated in Survey No. 188, about a furlong north of Survey No. 189, both of Agaram and right to same is admitted. The shrine with a chain square of vacant space around it for the use of worshippers will be demarcated out free from reservation and be retained as an enclosure. The path enters the reserve in Survey No. 185 of Agaram about a chain south of its north-west corner and runs west for about a furlong to the shrine.

III. Government patta and inam rights over the following lands are admitted. The lands will be demarcated out free from reservation and be retained as enclosures.

Village.	*Survey number.*	*Extent.* ACS.	CS.	*Remarks.*
Kuppanattam ..	Inam 72	1	79	Access is allowed by path No, 4.
Mudanai	Patta 804 B	1	74	Access is allowed by men and cultivating cattle of Survey No. 803 of Mudanai and running west for about a furlong to the land.
	Patta 810 A	2	25	By a path entering the reserve at the north most point of Survey No. 810 of Mudanai and running south for about half a furlong to the land.
	Total..	6	07	

IV. Government patta usufruct rights over the following trees are admitted, subject to any rules that may hereafter be passed by the Governor in Council under section 12 (b) of the Forest Act and also provided that no grant, sale, lease, mortgage or other alienation of the usufruct shall be made without the sanction of Government in accordance with section 19 of the Act, and that no access shall be had to trees without the permission of the Forest Officers save during the months from March to July both inclusive. The produce may can't say.

Village.	*Survey number.*	*Number and nature of trees.*	*Remarks.*
Aanram	188	2 Mango trees 4 Jack trees	Access is allowed for men only to a width of fou feet from the southern boundary of the reserve.
Kuppanattam	70	12 Jack trees 8 Mango trees	Access is allowed by path No. 4.

7. SEMAKOTTAI RESERVED FOREST.

I. The following rights of way have been admitted and recorded to a width of four yards open for people, cattle and carts :—

(1) Cart-track from Nadiyapattu to Iruppu. It enters the reserve eight chains north-east of south-east corner of Survey No. 257 of Nadiyapattu, runs for about two miles and one furlong south easterly and leaves the reserve two chains west of the south-west corner of Survey No. 302 of Iruppu.

(2) Cart-track from Palakollai to Kattugudalur. It enters the reserve five chains south of the south-eastern corner of Survey No. 254 of Nadiyapattu, runs in the easterly direction for about one mile three furlongs and leaves the reserve two chains south-west of the south-west corner of Survey No. 96 of Mudapulli.

(3) Cart-track from Irulakurichi to Iruppu. It enters the reserve one chain east of the south-east corner of Survey No. 248 of Irulakurichi, runs easterly for about two miles and leaves the block one chain west of the north-west corner of Survey No. 272 of Iruppu.

(4) Cart-track from Nanakollai and Aladi to Periakappankulam. It enters the reserve one and a half chains north-east of the eastern corner of Survey No. 581 of Manakollai, runs south easterly and leaves the forest two to two-fifth chains north of the north-west corner of Survey No. 423, again enters at the south-east corner of that number and leaves six chain west of the west side of Survey No. 473 both Iruppu. Its distance within the block is one mile and five furlongs.

(5) Cart-track from Guruvankuppam to Periakappankulam. It enters the reserve three chains east of the south-east corner of Survey No. 256 of Aladi, runs for about two miles and six furlongs easterly and south-easttrly and leaves the reserve five chains north-east of the north-eastern corner of Survey No. 310 of Kotteri (inside the reserve).

(6) Cart-track from Palayapattinam to Kotteri and Periakappankulam. It enters the reserve one chain south-east of the south-east corner of Survey No. 280 of Palayapattinam, runs for about six furlongs eastwards, southwards and again eastwards and leave the forest about one chain north of the north-western corner of Survey No. 62 of Kotteri, again enters the reserve at the Kandan station one furlong east of the north-east corner of Survey No. 86 of Kotteri, runs for about four furlongs and two chains easterly and north-easterly and leaves the forest two chains north of the tri-junction of Kotteri, Mudanai and Periakappankulam villages.

(7) Cart-track from Kotteri to Mudanai. It enters the reserve eight chains east of the Survey No. 107 of Kotteri, runs for about five and a half furlongs north and north-easterly, meets cart-track No. (6) about six chains south of the south-west corner of Survey No. 299 (inside the reserve) of the said village.

II The following patta lands are excluded from reservation and left as enclosures within the block with access as noted against each :—

Name of village.		*Survey number.*	*Extent.* A.	C.	
Irulakurichy	.. ..	653 654	5 8	18 25	Access by the cart track from Irulakurichi to Mudapuli which enters the reserve half a chain south of the north east corner of Survey No.252 of Irulakurichy and runs north eastwards to a point in the north side of survey No. 657 of the same village, three chains west of its north-east corner. The branch path runs from the said point to the south side of survey No. 654. The path will be three yards wide and open for people, cattle and carts.
Irulakurichy	.. ..	661 662	5 2	28 15	Access by the cart track from Irulakurichy to Iruppu and by a path three yards wide open for people cattle and carts branching at a point due south of the south-east corner of survey No. 622 and running to said corner. This is merged in the path allowed to surfey Nos. 416 and 415 of Iruppu.

Kotteri	296	1	40	Access by right of way No. (7).
Nadiyapattu	318	15	84	By right of way No. (1) and by a foot-path four feet wide branching there from at a point south-west of the south-west corner of the field and running to the said corner. It will be open for Pattadars people and cattle.
Iruppu	415 416	7	18	By right of way No. (3) and by a cart track branching from it at a point south-west of the south-west corner of survey No. 416 and running to the said corner and thence along its south side to the patta land in survey No. 415 which lies on the east side of survey No. 416. It will be three yards wide and open for people, cattle and carts.

III. The right to usufruct of the following trees were admitted and subject to such rules as may be made by the Governor in Council under Section 12 (b) of the Forest Act provided that no grant, lease, sale, mortgage or other alienation shall be made without the sanction of the Government in accordance with Section 19, and provided that no access shall be had without the permission of the Forest Department, except during the periods noted against each. The produce may be sold or bartered :—

(1) Seven Tamarind trees situated in Survey No. 317 in Nadiyapattu with access during the month of December, January, February and March by a path four feet wide running from the eastern-most corner of the survey No. 303 along the north boundary of the reserve and entering the reserve on the west side of the Aiyyarkulam at cairn No. (1) and running to the trees. Open for people and cattle.

(2) Twenty-four Eluppai trees in survey No. 301 of Kotteri to be approached by the cart-track connecting rights of way Nos. (5) and (6) and by a path branching from it at a point due west of the south-west corner of the said number and running to it and thence along its west side to its north-west corner. The paths will be three yards wide and open for people, cattle and carts and such of them as are not admitted as public rights of way may be used only from 15th April to 15th August.

(3) Forty one Eluppai trees on the west side of Valavanpallankulam which lies east of survey No. 301. To be approached by right of way No. (6) and thence by a path branching from it at the point of its junction with right of way No. (7) and running to the south-west corner of the said kulam and thence along the west side to the trees. The branch path will be three yards wide and open for people, cattle and carts. Access without permission allowed only during the period between 15th April to 15th August.

(4) The right of the people and cattle of Aladi and Palayappattinam villages to go to Kattukulam for water in Aladi village by its waste bund which adjoins the boundary and the right of Muthupadayachi of Aladi and his successors to repair it from time to time after giving due notice to the officers of the Forest Department are admitted.

IV. *Additional right of way sanctioned.*—A road to a width of 100 feet from Iruppu to Manakollai village through Semakottai Reserved Forests as per No. 1786/63 D, dated 8th July 1963.

7-A. SEMAKOTTAI EXTENSION RESERVED FORESTS.

Right of way over the following cart-track and foot path is admitted, the former for carts, men and cattle to a width of four yards, and the latter for men and cattle to a width of four feet :—

(1) Cart-track from Nadiyapattu to Mudapalli. It enters the reserve at the Khandam stone at the south-east corner of survey No. 17 runs east for about four fur-

longs and quits it about a chain west of the south-west corner of survey No. 322 both of Nadiyapattu.

(2) Foot-path from Nadiyapattu to Sinnaodappankuppam. It enters the reserve at the north-east corner of survey No. 17 runs east for four furlongs and quits it about a chain west of the south-west corner of Survey No. 322, both of Nadiyapattu.

Block No. 136.

8. VELANGULAM RESERVED FOREST.

I. Right of way over the cart-track from Thergu Iruppu to Kattukudalur in Cuddalore Taluk for men, cattle and carts to a width of four yards is admitted. It enters the reserve about half a furlong east of the south-east corner of Survey No. 134 runs north-east for about four and a half furlongs and quits it about quarter furlong south of the south-west corner of Survey No. 35 both of Therku Iruppu.

II. Right of way for men only to a width of four feet over path No. (1) and for men, cattle and carts to a width of four yards over the cart-track No. (2) to the under mentioned shrines and right to them is admitted. The shrines with a chain square and twenty-seven yards square of vacant spaces around each; respectively, for the use of worshippers will be demarcated out free from reservation and be retained as enclosures :—

(1) Path from Therku Iruppu to the shrine of Ramayammankoil situated about half a furlong east by south of the south-east corner of Survey No. 659 of Therku Iruppu. Access is allowed by a path entering the reserve about eighty-two yards south-east of the south-east corner of Survey No. 659 of Therku Iruppu and runs south-east for about (28) twenty-eight yards to the shrine.

(2) Cart-track from Velankulam to the shrine of Muniankoil situated about a furlong west of the south-west corner of Survey No. 14 of Velangulan. It enters the reserve about quarter furlong south of the boundary stone at the north-west corner of Survey No. 14 of Velankulam and runs south-west for about one hundred and forty yards to the shrine.

9. ALWARMALAI RESERVED FOREST.

I. The following public rights of way are admitted and recorded. Items (1), (2), (3) and (5) are cart-tracks and items (4) and (6) are foot paths. The cart-tracks will be open for men, cattle and cats to a width of four yards and the foot-paths for people and cattle to a width of four feet :—

(1) From Tyagai to the Madras-Salem Road. It enters the block three chains east of the north-east corner of Survey No. 294 of Tyagai and running through the reserve generally north-easternly for about one and a half miles, leaves it four and a half chains east of the south-west corner of Survey No. 70 of Valavanthankuppam.

(2) From Kudianallur to Poraiyur, enters the block six chains north-west of the north-west corner of Survey No. 126 of Kudianallur and running north-easternly for about one mile and one furlong through the reserve, leaves it two chains north-west of the north -west corner of Survey No. 124 of Poraiyur.

(3) From Poraiyur to Elavanatur, enters the block at a point about two chains north-west corner of Survey No. 177 of Sirunagalur and running north-easternly for about two miles through the reserve leaves it about 10 chains west of the north-west corner of Survey No. 108 of Puthur (A) Village.

(4) From Kudianallur to Kottaiyur, enters the block at a point one and a half chains north of the south-eastern corner of Survey No. 353 of Kudianallur and running through the reserve for about seven furlongs and joins right of way No. 5 (Noted below) at a point about ten chains west of the northern most corner of Survey No. 234 of Ninnaiyur.

(5) From Kongarayanpalayam to Kottaiyur, enters the block one chain north of the trijunction of Somaradapurani, Odayanachi and Kongarayanpalaym villages and running north-easternly through the reserve for about two miles and two furlongs leaves it one and a half chains north-east of the north-east corner of survey No. 233 of Ninnaiyur

(6) From Poraiyur to Settianthal, enters the block at the north-west corner of survey No. 95 of Poraiyur and running northerly through the reserve for about the furlongs, leaves it one chain east of the south-east corner of survey No. 47 of Settianthal.

II. The following pattah lands of Valavankuppam are excluded from reservation and retained an enclosures within the block. Field No. 125, extent 4.78, with access by a path from the south-west corner of survey No. 71 to the north-west corner of survey No. 125 open for people, cattle and carts to a width of 12 feet. Field No. 124, extent 1.98, with access by the path allowed for survey No. 125 :—

(1) To form a road to a width of 36 feet from mile 7/6 to 9/3 of Mudiyanur-Venguavadi to Kudiyanallur Kottaiyur Road through Alwarmalai Reserved Forest as per No. 1026/62 D, dated 23rd March 1962 of District Forest Officer, Cuddalore South division.

(2) To form a road to a width of 36 feet from Sembiamadevi to Poraiyur Road inside Alwarmalai Reserved Forest over a distance of 0.40 kilometre as per No. 5/60-D, dated 6th January 1961 of District Forest Officer, Cuddalore South Division.

10. KRISHNAPURAM RESERVED FOREST.

I. The public road from Anumandal to Vridhachalam (Cuddalore to Salem frontier road) to a width of forty-four yards has been excluded from reservation. It enters the forest at the south-east corner of survey No. 310 of Sembakurichy and running eath-south easternly for about two miles, leaves the block nine chains south-west of the north-west corner of survey No. 6 of Siruwakkam.

II. The following rights of way have been admitted and recorded Item Nos. (1), (2), (3), (5), (7), (8), (9), (11) and (12) are cart tracks and will be open for people, cattle and carts to a width off our yards and items (4), (6), (10), (13) and (14) are foot paths or people and cattle to a width of four feet and item No. (15) is a foot path for people only to a width of six feet:—

(1) Cart-track from Alambalam to Karundalakurichy. It enters the forest at the north-east corner of survey No. 165 of Alambalam and running south-easternly for about ten and a half furlong leaves the block about seven and a half chains west of the south-west corner of survey No. 218 of Karundalakurichy.

(2) Cart-track from Viranayankaram to Nainarpalayam. It enters the block immediately east of the north-east corner of Survey No. 18 of Viranayankaram and running north-eastern for about a mile and three and a half furlongs, leaves the block on the south side of survey No. 236 of Krishnapuram.

(3) Cart-track from No. 2 to Karundalakurichy. It branches from No. 2 about thirteen and a half chains south of the south-west corner of survey No. 235 of Krishnapuram and running south-easternly for about a mile and a quarter-leaves the forest about four chains north-west corner of survey No. 80 of Karundalakurichy.

(4) Foot path from Salem frontier road to Karundalakurichy. It enters the forest about nine chains north-west of the south-west corner of survey No. 14 of Karundalakurichy and running south-westernly for about six furlongs, leaves the forest about nine chains north north-west of the north-east corner of survey No. 81 of the same village.

(5) Cart-track from Karundalakurichy to Kilkuppam. It enters the forest about six chains north-west of the north-east corner of survey No. 93 of Karundalakurichy and running north-easternly for about seven and a half-furlongs, leaves the forest about seven chains east of the trijunction of Karundalakurichy, Naraiyur and Kilkuppam villages.

(6) Foot-path from Naraiyur to Nainarpalayam. It enters the reserve east of Perankuttai in Naraiyur and running north-easternly for about four furlongs, leaves the forest seventeen chains west of the north-west corner of survey No. 679 of Naraiyur.

(7) Cart-track from Naraiyur to Anumanandal. It enters the forest three chains south of Karumankuttai and running northernly for six furlongs, leaves he forest about twelve chains west of the south-west corner of survey No. 339 of Sambakurichy. [*See* item VIII (1) below].

(8) Cart-track from Sembakurichy to Arasankurichi. It enters the reserve at the south-east corner of survey No. 336 of Sembakurichy and running south-easternly for about six furlongs. leaves it five chains north-east of the north-west corner of survey No. 45 of Arasankurichi.

(9) Cart-track from Arasankurichi to the Public road (from Anumanandal to Vridhachalam). It enters the reserve three chains north-east of the north-east corner of survey No. 201 of Arasankurichi and running north-easternly for five furlongs meets the Public road two furlongs west of the trijunction of Arasankurichy Liyur and Siruvakkam villages. *See* remarks below.

(10) Foot-path from Arasankudi to Karunguli. It enters the forest half a chain west of the north-west corner of survey No. 176 of Arasankudi and running northernly for about a mile crossing the public road, leaves the forest two and half chains north-west of the north-east corner of survey No. 280 of Sambakurichy.

(11) Cart-track from Karunguli to Siruwakkam. It enters the forest nine chains north-west of the south-east corner of survey No. 597 of Iriyur and running south-easternly for about a mile and three furlongs, leaves it four and a half chains north of the south-west corner of survey No. 720 of the same village.

(12) Cart-track from Iriyur to Siruwakkam. It enters the forest eight chains west of the southern most point of survey No. 616 of Iriyur and running southernly for about nine furlongs, leaves it seven chains north of survey No. 27 of Siruwakkam.

(13) Foot-path from Mangalur to Iriyur. It enters the forest about a furlong north-west of the north-east corner of survey No. 87 of Bettakurichy and running north-westernly for about a mil and a furlong, leaves the forest about 10 chains north-east of the south-east corner of survey No. 635 of Iriyur.

(14) Foot-path from Iriyur to Rettakurichy. It enters the reserve nine chains north-east of the north-east corner of Survey No. 483 of Iriyur and running south-easternly for a mile and two furlongs, leaves the forest near the north-west corner of survey No. 123 of Kiloratture.

15. Foot path from Arasankudi to Iriyur. It branches from the Public road at the point where cart-track No. 9 meets it and running north-easternly, leavts the forest on the south side of survey No. 606 of Iriyur.

III. Ninety-nine cents of patta holding in survey No. 711 of Iriyur will be excluded from reservation and left as an enclosure within the block with access by path No. 15 and by a path branching there from at a point due west of it north-west corner and joining it to a width of four feet and open for people and cattle.

IV. The Iriyur Aiyyanarkoil will be excluded from reservation and left as an enclosure with quarter of a cawni around it, with access by cart-track No. 11 and thence by a foot-path four feet wide branching at a point where the cart-track inter-sects the Vellarodai and runs south-westernly for two furlongs to the temple. It will be open for people only.

V. The local fund quarries each to a breadth of thirty yards along the south side of the public road (Cuddalore to Salem frontier road) from sixty-first to sixty-one and a quarter milestone, and from sixty-second to sixty-two and a half mile-stone will be excluded from reservation and will be approached by the public road referred to.

VI. The right to the use of the water of the following tanks have been admitted and recorded in favour of the village of Naraiyur.

(1) Karunmankuttai will be approached by right of way No. 7 and thence by a foot-path branching from it at a point due west of its south-west corner and running to the said cornor. It will be open for men and cattle to a width of four feet.

(2) Perankuttai will be approached by right of way No. 6.

(3) Karunkuttai will be approached by right of way No. 5 and nthence by a foot-path branching therefrom at a ponit due west of its north-west corner and running to the said corner. It will be open for people to a width of four feet.

VII. The right to the patta usefruct of 10 tamarind trees in survey No. 701 of Eriyur has been admitted and recorded, subject to such rules as may be made by the Governor in Council under section 12 (6) of the Forest Act, provided that no grant, lease sale, mortgage or other alientation shall be made without the sanction of Government in accordance with section 19, access will be had to the trees by a path branching from right of survey No. 12 from a point one chain west of the south-west corner of survey No. 701 and running to the said trees. The path will be four feet wide for people only between the months of December and March at other times the permission of the Forest Department should be obtained. The pattadar is free to sell or carter the produce.

VIII. *Additional rights of way sanctioned.*—Improvement to the two cart tracks (1) from Salem–Vridhachalam Road to Arasankudi, (2) from Salem–Vridhachalam Road from Anumanandal to Naraiyur mentioned in items II (7) and II (9) running through Krishnapuram Reserve forests to a width of 36 feet as per No. 3145/56 D, dated 11th December 1956 of District Forest Officer, Chingleput Forest Division.

IX. A road to width of 36 feet from 0/4 to 1/2 from Karunguli village running through Krishnapuram Reserve forest as per No. 5/60 D, dated 14th February 1961 of District Forest Officer, Cuddalore, South Division.

11. Kattumailur Reserve Forest.

I. The cart-track from Melakurichy to Perianesalur have been admitted and recorded It enters the forest at the south-east corner of survey No. 47 of Melakurichy and running southernly for about seven and a half furlongs leaves the block about twelve chains north of the northern most corner of survey No. 62 of Peria Nesalur. It will be open for people, cattle and carts to a width of four yards.

II. Survey No. 246 acres 2.58 of Kilkurichy has been excluded from reservation and left as an enclosure within the block. It is to be approached by a path which enters the reserve at a point about four chains north-east corner of the north-east corner of survey No. 13 of Peria Nesalur and runs south of the southern boundary of Kilkurichy to the said field. It will be open for man and cattle to a width of six feet.

11. A KATTUMAILUR AND EXTENSIAN RESERVE FORESTS.

Right of way over the undermentioned cart-track and foot-fath is admitted. The former for men, cattle and carts to a width of twelve feet and the latter for men and cattle to width of four feet.

(1) Cart-track from Periyanisalur to Kattumailur. It runs along the northern boundary of the reserve for about three and a half furlongs and quits it at the north-west corner of survey No. 319 of Kattumailur.

(2) Foot-path from Kattumailur to Vridhachalam–Atur Road. It enters the reserve about a quarter furlong west of the south-east corner of survey No. 362 of Kattumailur, runs south-west for about four furlong and quits it about two chains west of the boundary stone at the north-east corner of survey No. 126 of Periyanisalur.

12. KOTTALAMALAI RESERVE FOREST.

The following cart-tracks each to a width of ten foot have been admitted within the reserve—

(1) From Kottalam to Vanavaratti. Enters the reserve about four chains each of Umantangal and running through it south-westernly for twelve furlongs, leaves it on the east side of survey No. of Vanavaratti..

(2) From Vilambur to Vanavaratti. Enters the reserve at cairn No. 1 on the east side of survey No. 307 of Vilambur and running south-easternly for ten furlongs through it, joins cart track No. 1 at about six chains south-east of Rettai Ellaikuttai inside the forest in Vanavaratti village.

(3) From Kottalam to Pukkiravon. Enters the reserve on the eastern side of the hill at about five chains south-west of the south-west corner of survey No. 488 of Kottalam village and running south-westernly for about two miles and one furlong in the reserve through the Sinna Rettakanai Tangal in the Vanavaratti village, leaves it at about fourteen chains west-north-west of the bounadry stone immediately north of trijunction of Sattanur, Vanavaratti and Ogaiyur villages.

(4) From Kanankur to Indally. Enters the reserve on its eastern boundary at a point about one chain south of survey No. 378 of Kanankur and running through it west-north-westernly for two miles and five furlongs leaves it immediately north of the first boundary stone north of the trijunction of Toralur, Kattanandal and Kottalam villages.

13. KUTTADI RESERVE FOREST.

Remarks.—(1) The following public rights of way are admitted.

(1) Cart-track from Arinattam to Vandipalayam hamlet of Sendamangalam. It enters the forest nine chains east of the Senkurichi Arinattam-Kuttadi trijunction and running north-westernly and northernly leaves it about two chains; south-west of the south-east corner of survey No. 1689 of Padur.

(2) Foot-path from Kallakurichy to Vandiapalayam hamlet of Sendamanyalam. It enters the forest two and a half chains west of the south-west corner of survey No. 4 of Kuttadi and running northwards leaves it at the south-west corner of survey No. 1706 of Padur.

(3) Cart-track from Kallakurichy to Vandipalayam. It enters the forestnorth of the north-east corner of Survey No. 6 of Kuttadi and running northern by leaves it six and a half chains east of the south-east corner of survey No. 1718 of Padur.

(4) Foot-path from Kuttadi to Sendamangalam. It enters the forest at the north side of suvery No. 25 and leaves it at the west side of survey No. 25 and leaves it at the west side of survey No. 51 both of Kuttadi village again enters the forest at the east end of Kuttadi tankbund and leaves it at cairn No. 2, aga in enters the forest at cairn No. 1 and finally leaves it at the south-east corner of survey No. 965 of Sendamangalam village. Its course is easternly and northernly.

N.B.—The cart-tracks are twelve feet wide and the foot-paths four feet; the former are open for people, cattle and carts and the latter for people and cattle.

II. In favour of Pattadar of survey fields Nos. 1313 to 1318, 1333 and 1334 of Sendamangalam, a right of way is allowed from the north-east corner of survey No. 1333 south-eastward to cairn No. 1 where it leaves the reserve. It is four yards wide and open for people, cattle and carts.

14. KALLAMEDU RESERVE FOREST BLOCK NO. 117.

I. Right of way over the undermentioned cart-tracks and foot paths is admitted. Cart tracks each to a width of four yards for men, cattle and carts and footpaths for men and cattle each to a width of four feet.

(1) Cart-track from Kallamedu to Ellavathadi. It enters the reserve on the east side of survey No. 54 about quarter furlong south to its north-east corner, all of Kallamedu, runs south-east and east and quits it about a chain west of north-east corner of survey No. 76, Ellavatti.

(2) Cart-track from Kallamedu to Odappankuppam. It branches from the above cart-tracfl (1) about a half a furlong south-east of its entrance runs south-east for about three furlongs and quits about a furlong south of the north-west corner of survey No. 96 of Odappankuppam.

(3) Cart-track from Kallamedu to Ellavathadi. It enters the reserve about a chain south-west of the south-east corner of survey No. 558 runs easternly south for about one and half furlongs and quits it in survey No. 574 about a chain south of its north-west corner. It again enters the reserve about half a chain west of the trijunction of survey Nos. 577, 580 and 592 runs south-east for about two and a quarter furlong and suits it about a furlong north-west of the south-west corner of survey No. 227 all of Sendanadu.

(4) Footpath from Kallamedu to Ellavathadi. It enters the reserve about ten chains south-east of the south-east corner of survey No. 124 of Kallamedu, runs south-east for about two miles and quits it about two and a half chain south of south-east corner of survey No. 2 of Ellavathady.

(5) Footpath from Odappankuppam to Toppayankulam hamlet of Sendanadu. It enters the reserve about two and a quarter chains east of the north-west corner of survey No. 79 of Odappankuppam runs north for about a mile and quits it about two chains north-west of south-west corner of survey No. 227 of Sandanadu.

II. Government patta rights over the following land is admitted. The lands will be demarcated out free from reservation and be retained as enclosures.

Village.	*Survey No.*	*Extent* ACS.	*Remarks.*
Sendanadu	223B	4·26	Access is allowed for men and cultivating cattle to a width of four feet from the northern boundry of the block by path in item I (5).
	217	13·84	
	595	7·23	
	Total ..	25·33	

III. *Additional rights of way sanctoned.* To form a road to a width of 10.06 meters connecting Thippiankulam and Elavadi through Kallamedu Reserve Forests as per No. 4376/55 D, dated 23rd January 1956 of District Forest Officer, Chingleput Forest Division.

15. MAGARUR RESERVE FOREST.

I. Right of way over the undermentioned cart-tracks and foot-paths is admitted Nos. (1) to (3) for men cattle and carts to a width of four years and Nos. (4) to (7) for men and cattle each to a width of four feet :—

(1) Cart-track from Iyyanur to Kilneriyappanur. It enters the reserve about twenty-five yards south-east of the trijunction of Magarur, Iyyanur and Ogaiyur (5) villages runs north-west for about half a furlong and quits it about quarter furlong west of the above trijunction.

(2) Cart-track from Iyyanur to Magarur. It enters the reserves about a furlong south-east of the trijunction of Iyyanur, Magarur and Ogaiyur (5) villages runs south-east for about one and three-eigth mile and quits it in survey No. 11 of Magarur about fifty yards south of it north-west corner.

(3) Cart-track from Magarur to Ogaiyur. It enters the reserve on the west side of survey No. 36 of Magarur about quarter furlong south of its north-west corner, runs north for about seven furlongs and quits it about a furlong east of the trijunction stone between Magarur, Kilnariappanur and Ogaiyur villages.

(4) Footpath from Kilnariyappanur to Ogaiyur. It enters the reserve about three-eighth furlong north-east of the north-east corner of Survey No. 127 of Kilnarappanur, runs north-east for about four and a half furlongs and quits it at the south-east corner of survey No. 132 of the same village.

(5) Path from Kilnariappanur to Magarur. It enters the reserve about three quarter furlong east of the south-east corner of survey No. 128 of Kilnariappanur, runs south-east for about five furlongs and quits it about one and a half furlongs north-west of the north-west corner of survey No. 102 of Magarur.

(6) Footpath from Magarur to Ogaiyur. It enters the reserve about quarter furlong south-west corner of the south-west corner of Survey No. 26 of Magarur, runs north by west for about one and a half mile and quits it at the trijunction between Iyyanur, Magarur and Ogaiyur.

(7) Footpath from Magarur to Iyyanur. It enters the reserve, at the north-east corner of survey No. 55 of Magarur, runs north-east for about a mile and quits it about three-quarters furlongs north-west of the north-west corner of survey No. 382 of Iyyanur.

II. Right of way for men only to a width of three feet over the undermentioned paths to temples and shrine and the right to them is admittel. The temples with thirty-five yards square around it for the use of worshippers will be demarcated out free from reservation and be retained as enclosures—

(1) Branch path from the path in item 1 (7) to the temple of Kolattiamman koil situated about a chain north of the north-east corner of survey No. 54 of Magarur. It branches about fifty yards south Kolattimmankoil kolam and runs east for about ten yards to the temple.

(2) Branch path from the path in item 1 (6) to the shrine of Karuppanarkoil, situated south of survey No. 47 of Magarur. It branches about eighty-eight yards south-west of the south-east corner of survey No. 47 of Magarur and runs east for about ten yards to the shrine.

III. Government patta and inam rights over the following lands are admitted. The lands will be demarcated out free from reservation and be retained as enclosures :—

Village.	*Inam or Patta.*	*Survey number.*	*Extent* ACS.	*Remarks.*
Kilnariyappanur ..	Inam.	136	0·45	Access is allowed for men and cultivating cattle to a width of four feet by a branch path braoching from path in item 1 (5) about ten yards south west of Periyatopp-dakolam and runs east for about eight yards.
		137	0·80	
		138	0·62	
		Total ..	1·87	
	Patta.	42	5·75	Access is allowed for men and cultivating cattle to a width of four feet by a path entering the reserve at the north-east corner of Survey No. 36 of Magarur and running north east and north for about four and quarter furlongs.
		43	7·17	
	Patta.	44	10·34	
	Inam.	45	1·58	
		46	1·77	
		47A	10·29	
		53F	0·38	
		53H	0·96	
	Inam.	50	4·42	
	Patta.	51	1·44	
	Inam.	52	1·53	
		Total ..	45·63	
		Grand total ..	47·50	

16. NANGUR RESERVE FOREST.

I. The cart-track from Orangur to Lekkur has been admitted and recorded within the block. It enters the reserve at the trijunction of Pulikaranbalur, Nangur and Kottanur (ma) villages and running south easternly for about two miles and three furlongs, leaves the block one furlong north of survey No. 377 of Lekkur. It will be open for men, cattle and carts to a width of four yards.

The following private holdings have been admitted and excluded from reservation and they are left as enclosures within the block :—

Village.	*Survey number.*	*Extent* ACS.	*Remarks.*
1 Thachur	101	4·75	With access by a path four yards wide from the south east corner of survey No. 113 of Thachur to the south east corner of the field. It will be open for people, cattle and carts.
2 Nangur	33 36 40 47	1·46 1·69 2·91 1·59	With access by right of way No. 1 (supra) and thence by a foot path six feet wide branching from a point in the said path No. 1 due north of the north eastern corner of survey No. 33 and running to the said corner thence along the eastern sides of survey No. 33, 36 and 40 to the south east oorner of the last mentioned field and thence in a direct line to the north west corner of survey No. 47. It will be open for people and cattle.
	29	3·51	Is approached by right of way No. 1 (supra)
	22	8·21	Is approached by right of wayNo. 1 and by a path six feet wide branching from it at the point where the west side of the survey No. 29 cuts its south side thence along the west side of the side field to its south west corner and thence to north west corner of survey No. 22. It will be open for men and cattle.
Do	58	6·29	Is approached by foot path six feet widc, entering the reserve four chians south east of the south west corner of the field and running to the said corner. It will be open for men and cattle.
Do.	[illegible]	1·32	Is approached by a foot path six feet wide running from a point in the reserve boundary due south of the south west corner of the field to the said corner. It will be open for people and cattle.
Do. P. No. 24		1·32	Is approached by a path six feet wide from a point about three chains north west of the north west corner of survey No. 87 of Thachur to the South east corner of the field.

17. PORASAKURICHI RESERVE FOREST.

I. Right of way over the following cart-tracks for carts-men and cattle to a width of four yards is admitted—

(1) From Porasakurichy to Velakurichi. It enters the reserve about two chains north of the north-east corner of survey No. 482 of Porasakurichy village, runs south-east for about one mile and three furlongs and quits it in survey No. 216 of Velakurichy village.

(2) From Porasakurichy to Iyanur. It enters the reserve about two a half chains south of the south-east corner of survey No. 257 of Porasakurichy, runs south for about five furlongs and quits it in Ogaiyur limits about a furlong east of the trijunction stone between Porasakurichi, Ogaiyur and Kanankur villages.

(3). Cart-track to Marimuthu Iyanar shrine. It branches from cart-track No. (1) near Karukuttai vari (Stream) and runs north-east for about a furlong to the shrine.

II. Right of way for men only to a width of four feet to the shrine of Marimuthu Iyanarkoil situated one and a half furlongs south of the south-west corner of survey No. 283 of Porasakurichy village is admitted. The shrine with a chain of vacant space around it will be demarcated out free from reesrvation and be retained as enclosure. The path to the shrine enters the reserve in the south side of survey No. 511 C of Porasakurichy village and runs south-east for about a furlong to the shrine.

III. The undermentioned lands of Porasakurichy village will be demarcated out free from reservation and be retained as enclosures :—

Survey number.	*Extent*		*Remarks.*
	Acres.	*cents.*	
509A	0	97	Access is allowed for men and cultivating cattle by a path to southern boundary of th southern boundary of the block.
509B	1	07	
509C	0	96	
509D	0	92	
510	1	97	Access is allowed for men and cultivating cattle by a path to a width of four feet branching from Porasakurichy-Velakurichy cart-track and running south for about two and a quarter furlongs to the land.
493A	0	35	
Total	6	26	

18. THOTTAPADI RESERVE FOREST.

I. The undermentioned right of way are allowed within the block :—

(1) Cart-track from Nayinarpalayam to Chinnasalem, four yards wide, and open for people, cattle and carts. It enters the reserve about a chain north of the south-west corner of survey No. 292 of Naiynarpalayam and running north-westwards for about one mile leaves it about three chains east-south-east of the north-west corner of survey No. 245 of Thottapadi.

II. Cart-track from Rayapalayam to Nayinarpalayam, four yards wide, and open for people, cattle and carts. It enters the block about three chains south-south-west of the south-west corner of survey No. 166 of Isandai and running southwards for about seven furlongs, leaves it about eight chains north-east of the north-west corner of survey No. 132 of Nayinarpalayam.

III. Cart-track to Chinnasalem, four yards wide and open for people, cattle and carts. It branches from item No II, where it crosses the south side of survey No. 193 of Isandai village and running west-north westwards for about one mile and two furlongs, leaves it on the north side of survey No. 2 of Thottapadi about four chains west of the north-east corner of the field.

IV. Footpath to Pethasamudram, four feet wide and open for people and cattle. It branches from item No. 2 south of the south-east corner of survey No. 193 of Isandai and running south-westwards, leaves it about eight chains east of the north-west corner of survey No. 70 of Nayinarpalayam. It again enters the block on the west side of the said No. 70 about one furlong from its noth-west corner and running south-westwards leaves it about two and a half chains north-east of the south-west corner of survey No. 292. Its length within the block is about one mile.

V. Footpath from Chinnasalem to Kuppam, four feet wide and open for people and cattle. It enters the block on the north-side of survey No. 204 of Isandai about seven chains west-south-west of the village boundary stone at the north-east corner of the field and running soutn eastwards for about one mile and two furlongs, leaves it about seven chains south-west of the north-west corner of survey No. 28 of Nayinarpalaiyam.

VI. Cart-track from Isandai to Nayinarpalaiyam four yards wide and open for people, Cattle and Carts. It enters the reserve on the south side of Survey No. 139 of Isandai village about five chains west of the south-east corner of the field and running south-westwards for about four furlongs, leaves it about two and a half chains north of the north-west corner of survey No. 16 of Nayinarpalaiyam.

VII. Footpath from Nayinarpalaiyam to Nattarmangalam four feet wide and open for people and cattle. It enters the block about a chain north-west of the north-east corner of survey No. 15 of Nayinarpalaiyam and running north-eastwards leaves it at the north-east corner of survey No. 1 of the same village. Its length within the block is about twenty-four chains.

Additional rights of way sanctioned.—A road to a width of 36 feet from Chinnasalem to Nayinarpalaiyam through Thottapadi Reserved Forest as per No. 5/60-D, dated 7th February 1961 of District Forest Officer, Cuddalore South Division.

19. *Varanjaram Reserved Forest.*

Remarks.—I. Right of way over the undermentioned cart-tracks and foot path is admitted, Nos. (1) and (2) for men, cattle and carts, each to a width of four yards and No. (3) for men and cattle to a width of four feet:—

(1) Cart-track from Iyanur to Varanjaram. It enters the reserve at the north-east corner of survey No. 102 of Iyyanur, runs north by east for about seven furlongs and quits it at the south-east corner of survey No. 365 of Velakkurichi.

(2) Cart-track from Iyyanur to Marur. It branches from the cart-track No. (1) about quarter furlong south of the trijunction stone between Velakkurichy, Varanjaram and Iyyanur, runs east for about a mile and quits it south of Kattukolam in survey No. 1 of Marur.

(3) Footpath from Iyyanur to Marur. It enters the reserve east of the south-east coner of survey No. 108 of Iyyanur, runs east for about seven furlongs and quits it at the north-west corner of survey No. 65 of Marur.

II. Right of way for men only to a width of four feet over the path from Settuvarayankuppam to the shrine of Karuppanarkoil, stuated about a furlong north of survey No. 10 of Settuvarayankuppam and right to the same is admitted. The shrine with a vacant space square in shape of twenty-two yards from each side of the shrine for the use of worshippers will be demarcated out free from reservation and retained as an enclosure. The path enters the reserce at the north-west corner of survey No. 11 of Settuvarayankuppam and runs north by east for about a furlong to the shrine.

III. Government patta rights over the following lands are admitted. The lands will be demarcated out from reservation and be retained as an enclosure :—

Village.	*Survey No.*	*Extent.*		*Remarks.*
		Acres.	*Cents.*	
(1)	(2)	(3)	(4)	(5)
Varanjaram	218	1	34	
	2A	11	19	Access is allowed to the land by the cart track No. (2)
	Total ..	12	53	

IV. (1) Right to the usufruct of the undermentioned tamarind trees is admitteed, subject to any rules that may hereafter be passed by the Governor-in-council under section 12 (*b*) of the Forest Act.

(2) Provided that no grant, sale, lease, mortgage or other alienation of the usufruct of the trees shall be made without the sanction of Government under section 19 of the Act; and

(3) That no access shall be had to the trees without the permission of the forest officers, save during the months from January to March, both inclusive. The produce may be sold or bartered.

Village.	*Survey.*	*No. of tamarind trees.*	*Remarks.*
(1)	(2)	(3)	(4)
Varanjaram	221	10	Access is allowed to the trees for men only to a width of four feet along both banks of the Pushnampallattu Odai (stream)
Settuvarayankuppam ..	2	4	Access is allowed by the cart track No. (2).

20. *Kanai Reserved Forests.*

Notification not available.

21. *Puttai Reserved Forest.*

Right of way for men only to a width of four feet over the path from Puttai to the shrine of Veduppukkai Muniyappan Koil situated about a furlong south of the trijunction stone between Mallapuram, Puttai and Kurumbagoundan Jaghir is admitted. The shrine with five yards square of vacant space around the same for the use of worshippers will be demarcated out-free from reservation and be retained as an enclosure.

The path enters the reserve about a chain south-east of the western most corner of survey No. 3 of Puttai and runs west for about two furlongs to the shrine.

22. *Parikam Reserved Forest.*

Right of way over the undermentioned cart-track and foot paths is admitted; No. 1 for men, cattle and carts to a width of four yards, and Nos. (2) and (3) for men and cattle each to a width of four feet:—

(1) Cart-track from Parikam to Eduthavayanatham. It enters the reserve about a chain north-east of the south-west corner of survey No. 252 of Parikam, runs north-west for about two and a half furlongs and quits it in survey No. 200 of Eduthavayanatham.

(2) Foot-pathfrom Parikam to Melparkiam in Jadayagavundan Jaghir. It enters the reserve about a chain north of the north-west corner of survey No. 267 of Parikam runs south-west and north-west for about four and three quarters furlongs and a half furlongs and quit it Jadayagoundan Jaghir limits about a mile north of the south-west corner of the reserve.

(3) Foot-path from Eduthavayanatham to Melparigam in Jadayagoundan Jaghir. It enters the reserve in survey No. 266 about three chains south-west of the south-west corner of survey No. 258, runs south-west for about a furlong, and meets the path No. 259 all of Parikam, declared reserved forest wide page 250 of Part I of the *Fort St. George Gazette*, dated 25th February 1896 and District Gazette for April 1896.

23. *Rangappanur Reserved Forests.*

I. The following paths are admitted and recorded within the block. The paths are open for men, cattle and carts each to a width of ten feet:—

(1) From Puttai to Puliyankottai, enters the block two and a half chains north of the north-east corner of survey No. 566 of Mallapuram and running north-west for about twenty-three furlongs through the block leaves it at the trijunction of Rangappanur and Lakkanayakampatti village with the Kurumbagowandan Jaghir.

(2) From Rangappanur to Mulaikadu enters the block on its eastern boundary, at a point about one furlong west of Appukuttikulam, and running north-westerly for about two miles through the block leaves it at the trijunction of the 5th and 3rd khandams of Rangappanur with the Kurumbagowndan Jaghir.

(3) From Rangappanur to Pappathimulai, enters the block at the village boundary stone west of the south-west corner of survey No. 418 of Mallapuram and running south-westerly for eight furlongs leaves the block one chain south of Asappankuttai in Mallapuram.

(4) From Rangappanur to Puliyankottai, enters the block about half a chain west of the north-west corner of survey No. 142 of Rangappanur and running north-westerly for about a mile through the block joins cart-track Nos. 1 and 10 chains south of its point of exit.

II. The point of patta holding are admitted and excluded from reservation and left as enclosures within the block.

Village. (1)	*Survey number.* (2)	*Patta number.* (3)	*Extent.* ACS. (4)	*Remarks.* (5)
Rangappanur ..	126	..	1–98	With access by a path which enters the forest at the point of entrance of cart-track No. 3 and running north-westerly to the south-east corner of survey No. 126, thence along its east side and the east sides of survey Nos. 127 and 128 to the north-east to the south-east corner of survey No. 130. It will be open for men, cattle and carts to a width of four yards.
Do.	127		3–55	
Do.	128		5–16	
Do.	130		1–28	
Mallapuram ..	426	C·92	1–98	With access by a path running from the north-east east corner of survey No. 441 via survey No 442 to the west side of the enclosure. It will be open for people and cattle to a width of three yards.
Do.	426	G·256	1–57	With access by a cart-track No. 1 with passes through the enclosure.
Do.	432	A·256	1–98	With access by a path branching from cart-track No. 3 at a point about one and a half chains east of Appankuttai and running north-east to the enclosure. It will be open for men cattle and carts to a width of ten feet

III. The Kannimarkoil in the Rangappanur village, situated at the foot of the Narimalai with half an acre around the temple is excluded from reservation and left as an running westwards from the junction of cart-tracks Nos. (1) and (2). It will be open for people only to a width of three feet.

24. *Tagarai Reserved Forest.*

The following patta lands have been excluded from reserve line and left as enclosures within the block with acres as noted against them :—

Village. (1)	*Survey number.* (2)	*Extent* ACS. (3)	*Access.* (4)
Tagarai	68	2·65	By a path ten feet wide and open for men, cattle and carts running from the south-west corner of survey No. 71 of Tagarai to the field.
Paithanthurai	386	1·39	By right of way No 3 as far as intersection with Kaikkalavan kuttai Odai (stream) and thence by a branch path four feet wide and open for the Pattadar's people and cattle running along the north bank of the said stream for seven furlongs to the field.
Thengiyanatham ..	86	0·91	By a path four feet wide open for the Pattadar's people and cattle and running for two furlongs from the north-west corner of survey No. 410 of Payithanthurai to the north-east corner of the enclosure.

B. The following temples have been excluded from reservation and left as enclosures within the block with access as noted against each :—

(1) Munianarkoil covering a space of half a cawni in Tengianattam village. To be approached by a path two yards wide open for people and cattle and running south-westwards for fifty chains to it from Pudukuttai (pond).

(2) Kamadappankoil covering an area of one-eighth of a cawni in Tengiyanatham. To be approached by right of way No. (3) infra. The temple lies at a distance of one mile and fifteen chains from the eastern boundary of the block.

(3) Kambathadiankoil to a space of two cents for the purpose of worship, situated in survey No. 391 south of the south-west corner of survey No. 421, both in Paithanthurai. To be approached by a path four feet wide open for people only branching from right of way No. (3) infra at a point where the west side of survey No. 422 cuts the said right of way and running along the west sides of survey Nos. 422 and 421 to the south-west corner of the latter and thence in a direct line to the temple.

(4) Perumalkoil to a space of two cents for purpose of worship situated at the north-west corner of Kaikalavankulam. To be approached by right of way No. (3) infra and by a path four feet wide open for people only, branching from it at the point where the Kaikalavankuttai odai (stream) cuts the right of way and thence along its footpath from Chinna Tirupadi to Kachirapalayam. It enters the block near the trijunction of Thengiyanatham, Jadayagowndan Jaghir and Kadathur runs north-eastwards for two and three quarter miles within the block and leaves it five chains west of Ethikulam (pond) in survey No. 824 of Kachirapalayam. It will be two yards wide and open for people and cattle only.

(5) Foot path from Tagarai to Naranampatti, etc. village. It branches from path No. (1) about three chains east of seven Kuttai and running west-north westward for about two miles within the block, leaves it about five furlongs south-west of Chinna Tirupadi koil. It will be two yards wide and open for people and cattle only.

25. *Mallapuram Reserved Forest.*

I. The following cart-tracks each to a width of ten feet are admitted and recorded within the blocks :—

(1) *From Sittanthangal to Puttirampattu.*—Enters the block about nine chains north-east of the north-eastern corner of survey No. 242 of Puttirampattu, and running north-westerly for five furlongs through the reserve, leaves it on its northern boundary at a point about four and a half chains west of the south-west corner of survey No. 236 of Puthirampattu.

(2) *From* Tiagarajapuram to Puthirampattu.—Enters the block at its southern boundary about three chains north-west of the Kandam stone at the south-west corner of survey No. 319 (party inside the forest) Urangani and runing northernly, for about ten furlongs through the reserve leaves it on its northern boundary about two chains south of survey No. 243 of Mallapuram.

II. The following private holdings are excluded from reservation and retained as enclosure within the block south bank of the temple :—

5. Boothanakaruppan Koil to a space of two cents for purpose of worship, situated in survey No. 42 of Payithanthurai near its south-west corner. To be approached by the path allowed to Kambathadiyan koil (item No. 3).

C. *The following rights of way are allowed*—

(1) Foot path from Tagarai to Chinna Tirupadi. It enters the block one chain north of a rock in Survey No. 260 of Tagarai, runs north-westly through Sivankuttai for two and a half miles within the block and leaves it one furlong east of Chinna Tirupadi koil (temple). It will be four feet wide and open for people and cattle only.

(2) Foot path from Tengiyanattam to Chinna Tirupadi. It enters the block two chains south of the south-east corner of Survey No. 260 of Tengiyanattam runs westernly for two miles and five furlongs with the block and leaves it immediately north of the trijunction of Thengiyanattam, Kadathur, and Jadayagowandan Jaghir. It will be four feet wide and open for people and cattle only.

(3) Foot path (Pallakkupathai) from Payitthandurai to Chinna-Tirupathi. It enters the block two chains south of the south-east corner of Survey No. 366 of Payithanthurai and running generally westwards for about two miles and five furlongs leaves it near a village boundary stone next north of the trijunction of Tengiyanattam, Takarai and Jadayagowandan Jaghir. It will be three yards wide and open for people and cattle only.

(4) Periakanavaipathai from Pottiam to Kachirapalayam. It enters the block about three chains east of the south-east corner of Survey No. 392 of Parikam, runs eastwards for about one mile and three furlongs within the block and leaves it about three chains south-west of the south-east corner of Survey No. 575 of the same village It will be six yards wide and open for people, cattle and carts.

Village.	*Survey number.*	*Extent* acres. cents.	*Remarks.*
(1)	(2)	(3)	(4)
Sittanthengal	58	2·06	With access by a path running westwards from the north-west corner of Enikulam to the north-east corner of survey No. 58. It is twelve feet broad and open for men cattle and carts.
Do.	59	0·95	With access by a foot-path four feet wide from the north-east corner of survey No, 58 (aforesaid) the south-east corner of survey No. 59.
Puttiraapattn	241	1·81	With access by foot-path four feet wide from the south-east corner of survey No. 59 (aforesaid) and running along its south and west sides to the south side of survey No. 241.

26. MELPALANKUR RESERVED FOREST.

Remarks.—A The undermentioned rights of way are allowed within the block.—

(1) Cart-track from Mettur to Periyapagandai four yards wide and open for people and cattle and carts. It enters the block about three and a half chains east of the north-east corner of survey No. 105 of Kallerikuppam and running north-north eastwards for about two and a half miles within the leaves it about one and a half furlongs north north-east of the trijunction of Arasampatti, Palaiyanur and Maiyanur villages.

(2) Cart-track four yards wide and open for people cattle and carts. It enters the block about eight chains west south-west of the south-west corner of Survey No. 146 of Maiyanur and running south-eastwards joins path No. A-3 infra about fourteen chains north of the point of exist of the latter. It again enters the block about two chains south south-east of the south-east corner of Nallathannikulam (tank) in Palayasiruvakur and running south-eastwards and then southwards leaves it about five chains north-east of the north-east corner of Survey No. 103 of the said village. Its total length within the block is about three miles.

(3) Cart-track from Maiyanur to Palaiyasiruvakur four yards wide and open for people cattle and carts. It enters the block about ten chains south-south-westwards for about nine and a half furlongs within the block leaves it about five chains north-west of the north-west corner of Nallatannikulam (ank) in Palaiyasiruvakur.

(4) Foot path to Kilpadi two yards wide and open for people and cattle. It enters the block on the eastern boundary of Maiyannur village about thirteen and a half chains south-south-west of the Trijunction of Maiyanur Yal and Melpalankur village and running eastwards for about two and a quarter furlongs joins path No. A-5 infra about two furlongs from the joint of exit of the latter.

(5) Cart-track from Melpalankur to Maiyannur four yards wide and open for people, cattle and carts. It enters the block about five and a half chains west north-west of the south-west corner of survey No. 249 of the Melpalankur and running north-westwards for about a mile leaves it above five chains east of the trijunction of Melpalankur Yel and Maiyyanur.

(6) Cart-track from Melpalangur to Pallipattu, etc., villages four yards wide and open for people, cattle and carts. It enters the block about four chains south of the south-west corner of Survey No. 47 of Melpalangur and running south-westwards and then south-south-westwards for about three furlongs within the block leaves it on its southern boundary about a chain west of the boundary stone immediately east north-east of the quadrajunction of Palaiyasiruvankur Melpalankur, Sitteripattu and Sittal villages.

(7) Cart-track from Melpalangur to Palaiyasiruvakur four yards wide and open for people, cattle and carts. It branches from path A-6 supra about four chains south-west of Valiyakkarankolam (tank) and running south-westwards for about four and a half furlongs leaves the block about west of the northern most point of Survey No. 1 Sitteripattu.

(8) Cart-track from Pelaiyanur to cart-track A-1 supra four yards and open for people, cattle and carts. It enters the block at a point about six chains north of Vellaikuttai and running eastwards and north eastwards and north-eastwards for about ten chains joins path A-1 due of the east of the trijunction stone of Arasampattu, Palaiyanur and Maiyannur.

B. The following temples have been excluded from reservation and left as enclosure within the block with access as noted under each :—

(1) Ayyanarkoil situated in a tope measuring 135 links north to south and 144 links east to west, one and half chains west of the south-west corner of Survey No. 520 of Palaiyasiruvankur. The tope is excluded from reservation and left as an enclosure with the reservation that the tree should not be intereferd with by the public. To be approached by the cleared line of block up to the south-west corner of the said survey No. 520 and then by a path two yards wide and open for people and cattle running westwards to the temple enclosures.

(2) A space of 40 × 20 yards on the north limit of Ponperinankulam (tank) in the Melpalankur village where the villagers invoke their dirty. To be approached by a path two yards wide and open for people and cattle entering the block seven and a half chains due west of the north-west corner of survey No. 230 of the said village and running west north-weswards to the enclosure.

C. *The following rights are admitted within the block*—

(1) Right of the people of Sittal to water their cattle in Valiayakkarankolam (tank) in Melpalankur with access by a path two yards wide and open for people and cattle running westwards to it from a point in the reserve boundary due east of the tank.

(2) The right of the people of Melpalankur to water their cattle in the said Velayakarankolam with access by cart-track A-6 supra.

D. The right to the usufruct of the following patta trees is admitted under section II of the Forest Act, subject to such rules as may be made by the Governor in Council under section 12 (b) provided that no sale or other alienation shall be made except with the sanction of Government under section 19. The Pattadar shall be free to sell or barter the produce :—

Village.	*Survey number.*	*Number of trees.*	*Access.*
(1)	(2)	(3)	(4)
M p 'ankur	250	Three Eluppai trees ..	By a path two yards wide open during Aniperatari June–October every year for people only from the nearest point in the reserve boundary.

E. *Additional Rights Sanctioned.*—For excavation of a channel to augment supply to the minor irrigation tank from an anicut across Manimukthanadhi through Melpalangur Reserved Forests to awidth of 133 feet to 242 feet starting from Cairn No. 100, 101 to Cairn 91, 92 and to a width of 4.88 starting from Carin No. 57–58 to Cairn No. 56–57 as per No. 12117/62-D, dated 28th January 1963 of District Forest Officer, Cuddalore South Division.

27. POOSAPADI RESERVED FOREST.

8. The following right of way are allowed within the block :—

I. *Cart-track from ponparappi (ten) Vadakandur, etc., village.*—It enters the block near the south-west coner of survey No. 423 and running through survey Nos. 423, 420, 171, 177, 178, 179, 180, 162, 156, 54, 148, 147, 145, 187, 140, 141, 142, 133, 132, 130, 126, 107, 108 and 107 of Pusapadi leaves the block about six shains west-south west of the south-west corner of survey No. 105 of Elavadi. It will be four yards wide and open for people, cattle and carts. Its length within the block is about two miles.

II. *Cart-track from Puttur to Timmaiyapuram* :—It enters the block near the south-east corner of survey No. 439 and running through survey Nos. 439, 438, 437, 436, 435, 423, 424, 427, 429, 173, 174, and 175 leaves it at a point about one and a half chains north of the western most point of survey No. 190 all the Pusapadi. It will be four yards wide and open for people cattle and carts. Its length within the block is about six and three fourth furlongs.

III. *Foot path from Elavadi to Kallanattam.*—It enters the block in survey No. 114 about seven chains west of its south-west corner and running northwards leaves it on the south side of Survey No. 83, about five chains west of its south each corner, both of Elavadi. It will be two yards wide and open for people and cattle. Its length within the block is about six and a half furlongs.

IV. *A Cart-track from Tirumayapuram to Muttur.*—It enters the block on the east side of Survey No. 103 of Elavadi about seven chains north of its south-east corner and running westwards leave it on the west side of No. 105 of the same village about eight chains north-east of its southern most point. It will be four yards wide and open for people and cattle and carts. Its length within the block is about five furlongs.

B. The following rights are admitted.—(1) Right of people and cattle to use the water of Pappankolam in Survey No. 112 of Elavadi. To be approached by a pah two yards wide branching from way No. III at a point due west of the tank and running eastwards to it.

(2) Right of people and cattle to use the water of Surakuttai in Survey No. 439 of Pusapadi. To be approached by a path two yards wide branching from way No. II at the point due east of the tank and running westwards to it.

APPENDIX V

(*Vide* paragraph 58.)

List of fallen and missing Cairns in the Forests of Cuddalore South Division.

Serial number and name of the forest. (1)	Total length of the boundary. Kilometres. (2)	Miles.	Chains.	Total number of cairns. (3)	Number of fallen cairns. (4)		Number of missing cairns. (5)		Remarks. (6)
					Panruti Range.				
1 Kangiruppu Bit I R.F. ..	58·438	36	24	349	5, 21, 23, 30 to 32, 47, 55, 59, 63, 81, 102, 106, 141, 152, 155, 184, 185, 190, 212, 256, 257, 260, 304, 328.	25	1, 2, 3, 6 to 10, 13 to 17, 45, 46, 60, 62, 71 to 80, 86, 88, 96 to 100, 109, 114 to 127, 128 to 140, 194, 216, 221, 238, 297, 311, 312, 313, 316, 317, 320, 325, 334 to 349.	90	..
2 Kangiruppu Bit II R.F.				358	15, 16, 33, 54, 58, 60, 61, 69, 91, 103, 131, 136, 154, 156, 163, 223, 296, 324, 349, 351.	20	11, 14, 20 to 23, 33, 37, 42, 46, 48, 49, 68 to 75, 80, 114, 130, 132, 147, 157, 158, 161, 163, 177, 183, 283 to 289, 296, 300, 303 to 308, 312, 317, 318, 322, 323, 330, 333, 334, 353.	55	..
3 Killai R. F.	7·041	4	30	18	....		14, 15, 16, 17, 18 ..	5	..
4 Pichavaram	12·271	7	50	38	....		2, 4, 6, 7, 8, 9 ..	6	
5 Pichavaram Extension R.F. ..				46	....		1 to 5, 44, 45, 46 ..	8	..
			Total ..	809		45		164	..
					Vriddhachalam Range.				
6 Ammeri R.F.	8·047	5	00	69	2, 11	2	40	1	..
7 Narimanam	8·651	5	30	52	....		16, 17, 18	3	..
8 Samakottai R. F.	32·187	20	00	160	15, 31, 76, 84, 88, 127 and 137	8	1, 17, 24, 63, 68, 81, 82, 83, 91, 93, 94, 111, 125, 128, 129, 133.	16	..
9 Samakottai Extension ..				24	17, 18, 19, 20, 21	5	11, 22, 23, 24	4	..

10 Velangulam R.F.	10·058	6	20	45	....		3, 5, 6, 7, 8, 12, 17, 19, 20, 21, 22, 27.	12
11 Kattayanallur U.R.L. ..				27	....		19, 20, 22, 32, 34, 38, 40, 41.	8
			Total ..	377		13		44
					Ulundurpet Range.			
12 Alwarmalai R.F.	29·921	13	01	243	21 to 23, 33, 116, 210, 219A, 226B, 230, 237, 238.	11	15C, 17A, 18, 36, 37, 122, 146, 153, 153A, 220, 221, 226-A.	12
13 Krishnapuram R.F.	52·304	32	40	216	5, 20 to 22, 25 to 28, 30, 34 to 40, 46, 47, 156, 162, 163, 166, 174, 183.	24	43, 44, 73, 80, 82, 124, 125, 128, 131, 140, 141, 175.	12
14 Kattumailur R.F.				37	2	1	14, 19, 22, 29, 30 ..	5
15 Kattumailur Extension ..	19·321	12	00	54	6, 11, 14, 15, 17 to 19, 26 to 28, 31 to 38, 40, 41, 43, to 46, 49.	25	29	1
16 Kottalamalai R.F.	13·479	8	30	61	1, 22	2	....	
17 Kuttady R.F.	19·814	12	26	217	2, 51, 68, 71, 72, 75, 84, 103, 119, 201, 213.	11	94, 89, 90, 93, 95, 96, 97 ..	7
18 Kallamedu R.F.	10·461	6	40	67	1, 10, 14, 71, 78, 87 ..	6	28, 31, 32, 34, 40, 41, 52, 55, 66, 67.	10
19 Nangur R.F.	12·472	7	60	61	4, 18, 22, 49	4	5, 6, 30, 32	4
20 Magarur R.F.	11·466	7	10	72	6, 10, 15, 30, 45, 60, 61, 67, 68.	9	3, 4, 31, 34, 39, 41, 43, 63, 64.	9
21 Porasakurichy	10·662	6	50	88	47, 68, 73, 77	4	....	
22 Thotapadi R.F.	13·076	8	10	77	....		....	
23 Varanjaram R.F.	8·047	5	00	44	39, 40, 42	3	22, 44	2
24 Kuthakudi U.R.L.				60	....		3, 16, 17, 59, 60	5
25 Pandur U.R.L.				126	38, 42, 77, 86, 109	5	33, 53, 54, 80, 85, 89, 120 ..	7
26 Sirupakkam U.R.L.				137	4, 6, 8, 103, 121	5	109, 111, 112, 129 to 131 ..	6
			Total ..	1,580		110		80

APPENDIX V—*cont.*

(Vide paragraph 58)—*cont.*

LIST OF FALLEN AND MISSING CAIRNS IN THE FORESTS OF CUDDALORE SOUTH DIVISION—*cont.*

Serial number and name of the forest. (1)	*Total length of the boundary.* *Kilometres.* (2)	*Miles.* (3)	*Chains.* (4)	*Total number of cairns.* (5)	*Number of fallen cairns.* (6)		*Number of missing cairns.* (7)		*Remarks.* (8)
					Kallakurichy Range.				
27 Kanai R.F.	12·875	8	00	53	3, 7, 15	3	19, 41, 52	3	
28 Puttai R.F.	9·857	6	58	37	11, 22	2	31, 37	2	
29 Parigam R.F.	11·766	7	16	74	9, 12, 49, 65, 70	5	66, 68	2	
30 Rangappanur R.F.	13·277	8	21	73	8, 52, 64, 68	4	7, 8	2	
31 Tagarai R.F.	33·796	21	00	176	26, 44, 78, 168	4	13, 16, 17, 41, 169, 173 ..	6	
32 Mallapuram R.F.	8·549	5	26	43	40	1	33	1	
33 Melpalangur R.F.	22·228	13	64	117	8, 17, 28, 29	4	40	1	
34 Poosapadi R.F.	12·375	7	56	115	17, 31, 43, 53, 67, 68, 76, 86, 111, 112.	10	3, 9, 23, 71, 75, 109 ..	6	
			Total ..	688		33		23	

APPENDIX VI.

I. List of Plantations raised so far (up to 1964) in Cuddalore South Division.

(A) *List of plantations under Cashew.*

	Serial number and name of the plantation.	*Year of plantation.*	*Area in* *Hectares.*	*Area in* *Acres.*	*Remarks.*
	(1)	(2)	(3)	(4)	(5)
1	Semakottai South C.R.A. Coupe No. I	1956	252·11	623·0	..
2	Semakottai North C.R.A. Coupe No. I	1956	140·82	348·0	..
3	Ammeri C.R.A. Coupe No. I	1956	185·82	458·0	..
4	Kangiruppu R.F. Bit I C.R.A. Coupe I	1956	206·39	510·0	..
5	Kangiruppu Bit II C.R.A. Coupe No. I	1956	213·27	527·0	..
6	Semakottai South C.R.A. Coupe No. II	1957	172·80	427·0	..
7	Semakottai North C.R.A. Coupe No. II Kumri area	1957	193·03 72·44	477·0 179·0	.. ..
8	Kangiruppu Bit I C.R.A. Coupe No. II	1957	234·72	580·0	..
9	Kangiruppu Bit II C.R.A. Coupe No. II	1957	210·43	520·0	..
10	Narimanam C.R.A. Coupe No. II	1957	173·20	428·0	..
11	Kuttady C.R.A. Coupe No. I	1957	210·43	520·0	..
12	Semakottai South C.R.A. Coupe No. III	1958	219·34	542·0	..
13	Semakottai North C.R.A. Coupe No. III	1958	201·94	499·0	..
4	Narimanam C.R.A. Coupe No. III	1958	157·82	390·0	..
15	Kangiruppu R.F. Bit I.C.R.A. Coupe No. III	1958	206·39	510.0	..
16	Kangiruppu Bit II C.R.A. Coupe No. III	1958	213·27	527·0	..
17	Kuttady C.R.A. Coupe No. II	1958	220·14	544·0	..
18	Semakottai South C.R.A. Coupe No. IV	1959	155·80	385·0	..
19	Semakottai North C.R.A. Coupe No. IV	1959	221·36	547·0	..
20	Semakottai Mudanai C.R.A. Coupe No. IV	1959	208·00	514·0	..

APPENDIX VI—*cont.*

I. LIST OF PLANTATIONS RAISED SO FAR (UP TO 1964) IN CUDDALORE SOUTH DIVISION—*cont.*

(A) *List of Plantations under Cashew.*

Serial number and name of the plantation.		*Year of plantation.*	*Area in Hectares.*	*Area in Acres.*	*Remarks.*	
	(1)	(2)	(3)	(4)	(5)	
21	Kangiruppu R.F. Bit I C.R.A. Coupe No. IV	1959	236·34	584·0	..	
22	Kangiruppu R. F. Bit II C.R.A. Coupe No. IV	1959	196·67	486·0	..	
23	Kallamedu C.R.A. Coupe No. III	1959	217·71	538·0	..	
24	Semakottai South C.R.A. Coupe No. V	1960	200·31	495·0	..	
25	Semakottai North C.R.A. Coupe No. V	1960	123·43	305·0	..	
26	Semakottai South, Mudanai C.R.A. Coupe No. V	1960	205·17	507·0	..	
27	Kangiruppu R.F. Bit I C.R.A. Coupe No. V	1960	122·62	303·0	..	
28	Kangiruppu Bit II C.R.A. Coupe No. V	1960	219·74	543·0	..	
29	Kallamedu C.R.A. Coupe No. IV	1960	42·49	105·0	..	
30	Kuttady C.R.A. Coupe No. V	1960	48·96	121·0	..	
31	Narimanam C.R.A. Coupe No. VI	1961	30·12	25·0	..	AC.
32	Kangiruppu Bit I R.F. with Soil Conservation Works	1961	53·42	132·0	New area ..	132
					In 1959 C.R.A. ..	58
					Total ..	190
33	Narimanam C.R.A. Coupe No. VII	1962	31·16	77·0	..	
34	Kuttady C.R.A. Coupe No. VI	1962	24·28	60·0	..	
35	Kangiruppu F.R. Bit I C.R.A. Coupe No. VII	1962	6·07	15·0	..	

APPENDIX VI—*cont.*

II.—List of Plantations and their result in Cuddalore South Division.

(B) *List of plantations under casuarina.*

Serial number and name of the plantation.	*Year of lantation.*	*Area in Hectares.*	*Area in Acres.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)
1 Killai and Pichavaram	1957	36·42	90·0	Felled during 1964.
2 Killai	1959	20·23	50·0	New plantation.
3 Iruvelpet	1961	16·19	40·0	Do.
4 Thiruthuraiyur ..	1962	16·19	40·0	Do.
5 Thiruthuraiyur ..	1963	16·19	40·0	Do.
6 Ariyakosthi ..	1963	33·59	82·0	Originally planted in 1955 and felled.
7 Portonovo	1964	17·00	42·0	Originally planted in 1956 and felled.

III. (C) (i) List of plantations under rehabilitation (up to 1962) raised under old Technique.

Serial number and name of plantation.	*Year of plantation.*	*Area in Hectares.*	*Area in Acres.*
(1)	(2)	(3)	(4)
1 Alwarmalai	1955	40·37	100·00
2 Do.	1956	42·49	105·00
3 Tagarai	1956	42·09	104·00
4 Narimanam	1956	41·68	103·00
5 Alwarmalai	1957	146·50	362·00
6 Thottapady	1957	168·78	417·00
7 Do.	1957	112·50	278·00
8 Poosapady	1957	261·43	646·00
9 Thottapady	1958	93·08	230·00
10 Krishnapuram	1958	186·15	460·00
11 Alwarmalai	1958	184·14	455·00
12 Poosapadi	1958	196·68	486·00
13 Melpalangur	1958	237·55	587·00
14 Mallapuram	1958	173·20	428·00
15 Tagarai	1958	20·64	51·00
16 Rangappanur	1958	17·00	42·00
17 Krishnapuram	1959	194·25	480·00
18 Varanjaram	1959	113·31	280·00
19 Porasakurichy	1959	84·98	210·00
20 Tagarai	1959	14·97	37·00
21 Melpalangur	1959	208·41	515·00
22 Nangur	1960	232·69	575·00
23 Krishnapuram	1960	184·14	455·00
24 Tagarai	1960	21·85	54·00
25 Rangappanur	1900	17·00	42·00
26 Melpalangur	1961	186·16	460·00
27 Melpalangur	1961	57·47	142·00
28 Kottalamalai	1961	131·12	324·00
29 Kattumailur Extension R.F.	1961	90·65	224·00
30 Krishnapuram	1961	182·92	452·00
31 Tagarai	1961	20·23	50·00
32 Rangappanur	1961	17·00	42·00
33 Kottalamalai	1962	149·33	369·00
34 Krishnapuram	1962	216·50	535·00
35 Kattumailur	1962	133·55	330·00
36 Melpalangur	1962	109·26	270·00
37 Tagarai	1962	21·43	52·00
38 Rangappanur	1962	17·00	42·00

APPENDIX VI—*cont.*

(C) (ii) LIST OF PLANTATIONS UNDER REHABILITATION (FROM 1963) RAISED UNDER NEW TECHNIQUES.

Serial number and name of plantation.	*Year of plantation.*	*Area in*	
		Hectares.	*Acres.*
(1)	(2)	(3)	(4)
1 Kattaya Nallur (U.R.L.)	1963	42·49	105·00
2 Krishnapuram (East)	1963	40·47	100·00
3 Krishnapuram (West)	1963	41·27	102·00
4 Kattumailur	1963	20·64	51·00
5 Kottalamalai	1963	20·64	51·00
6 Melpalangur	1963	40·47	100·00
7 Krishnapuram (East)	1964	30·35	75·00
8 Krishnapuram (West)	1964	23·07	57·00
9 Kattumailur	1964	8·09	20·00
10 Melpalangur	1964	20·23	50·00
		287·72	711·00

IV (D) LIST OF EUCALYPTUS PLANTATIONS RAISED IN CUDDALORE SOUTH DIVISION.

Serial number and name of plantation.	*Year of regeneration.*	*Area in*	
		Hectares.	*Acres.*
(1)	(2)	(3)	(4)
1 Alwarmalai	1959	4·05	10·00
2 Tagarai	1962	4·05	10·00
3 Pandur	1962	16·19	40·00
4 Sirupakkam	1963	87·41	216·00
5 Pandur	1963	121·81	301·00
6 Sirupakkam	1964	46·94	116·00
7 Pandur	1964	60·70	150·00
8 Kuthakudi	1964	60·70	150·00
9 Alwarmalai	1964	34·40	85·00

V. E. MISCELLANEOUS PLANTATIONS.

Serial number and name of Plautation.	*Year of Plantation.*	*Areas in*		*Remarks.*
		Hectares.	*Acres.*	
(1)	(2)	(3)	(4)	(5)
	Teak.			
1 Ariyakhosti	1955	0·81	2·0	Complete failure.
2 Alwarmalai	1957	1·01	2·5	..
3 Krishnapuram	1961	8·09	0·20	

APPENDIX VI—*cont.*

F. Plantations raised under Farm Forestry Scheme in Cuddalore South Division up to 1964.

Serial number and taluk. (1)	*Panchayat Union.* (2)	*Village.* (3)	*Year.* (4)	*Hectares.* (5)	*Acres.* (6)	*Species planted.* (7)	*Remarks.* (8)
		Kallakurich Range.					
1 Kallakurichy	Kallakurichy	Emapper	1961	40·47	100·00	Babul and miscellaneous species.	..
2 Do.	Do.	Endli	1962	20·23	50·0	Do.	..
3 Do.	Do.	Thandalai	1964	20·23	50·0	Do.	..
4 Do.	Chinna Salem	Elavadi and Thottapadi	1961	40·47	100·0	Do.	..
5 Do.	Do.	Chinnasalem	1962	20·23	50·0	Do.	..
6 Do.	Do.	Esandai	1963	40·47	100·00	Do.	..
7 Do.	Thyagadurgam	Thiyagai	1961	40·47	100·0	Do.	..
8 Do.	Do.	Chittalur	1962	20·23	50·0	Do.	..
9 Do.	Do.	Palagacheri	1963	40·47	100·00	Do.	..
10 Do.	Sankarapuram	Oorangani	1963	40·47	100·00	Do.	..
11 Do.	Do.	Thygarajapuram	1964	20·23	50·0	Do.	..
			Total ..	343·97	850·0		
		Ulundurpet Range.					
1 Tirukoilur	Ulundurpet	Kattunemili	1961	40·47	100·0	Babul and miscellaneous species.	..
2 Do.	Do.	Killanur	1962	20·23	50·0	Do.	..
3 Do.	Do.	Pillur	1962	40·47	100·0	Do.	..
4 Do.	Do.	Paly	1963	40·47	100·0	Do.	..
5 Vriddhachalam	Mangalore	Mangalore	1961	40·47	100·0	Do.	..
6 Do.	Do.	Manayanur	1962	20·23	50·0	Do.	..
7 Do.	Do.	Sirupakkam	1963	80·94	200·0	Do.	..
8 Do.	Do.	Chetteri and Perieri	1963	60·70	150·0	Do.	..
9 Do.	Do.	Mariyur	1964	20·23	50·0	Do.	..
			Total ..	364·21	900·0		
		Vriddhachalam Range.					
1 Vriddhachalam	Nallur	Aivdagudi	1961	40·47	100·0	Babul and miscellaneous species	..
2 Do.	Do.	Nagar	1962	20·23	50·0	Do.	..
3 Do.	Do.	Nallur	1963	40·47	100·0	Do.	..
4 Do.	Kammapuram	Kottagam	1962	20·23	50·0	Do.	..
5 Do.	Do.	Athanur	1963	40·47	100·0	Do.	..
6 Do.	Do.	Sathapadi	1964	8·09	20·0	Do.	..
7 Do.	Do.	Adanur	1964	12·14	30·0	Do.	..
8 Do.	Vriddhachalam	Thoravalur	1963	40·47	100·0	Do.	..
9 Do.	Do.	Kodakkanur and Sathankudi.	1963	40·47	100·0	Do.	..
10 Do.	Do.	Koddukkur	1964	20·23	50·0		..
			Total ..	283·27	700·0		

APPENDIX VI—*cont.*

F. PLANTATIONS RAISED UNDER FARM FORESTRY SCHEME IN CUDDALORE SOUTH DIVISION UP TO 1964—*cont.*

Serial number and taluk. (1)	*Panchayat Union.* (2)	*Village.* (3)	*Year.* (4)	*Hectares.* (5)	*Acres.* (6)	*Species planted.* (7)	*Remarks.* (8)
		Panruti Range.					
1 Cuddalore	Panruti	Siruvathur	1961	40·47	100·0	Babul and Miscellaneous species.	..
2 Do.	Do.	Do.	1962	20·23	50·0	Do.	..
3 Do.	Do.	Thiruvatigai	1962	40·47	100·0	Do.	..
4 Do.	Do.	Natham	1963	40·47	100·0	Do.	..
5 Do.	Nellikuppam	Perumalnaickenpalayam	1963	24·28	60·0	Do.	..
6 Do.	Do.	Pattambakkam	1963	10·19	40·0	Do.	..
7 Do.	Do.	Kumaramangalam	1964	24·28	60·0	Do.	..
8 Do.	Cuddalore	Nagappanur	1963	10·19	40·0	Do.	..
9 Do.	Do.	Tiruppanampakkam	1963	24·28	60·0	Do.	..
10 Do.	Do.	Vellakarai	1964	20·23	50·0	Do.	..
11 Chidambaram	Keerapalayam	Vilpalayamkottai	1961	40·47	100·0	Do.	..
12 Do.	Do.	Do.	1962	20·23	50·0	Do.	..
13 Do.	Do.	Kilpalayamkottai, Kanur and Melralayamkottai.	1963	20·23	50·0	Do.	..
14 Do.	Kattumannargudi	Nagarapadi	1964	20·23	50·0	Do.	..
15 Do.	Bhuvanagiri	Melvalayamdevi	1961	40·47	100·0	Do.	..
16 Do.	Do.	Do.	1962	20·23	50·0	Do.	..
17 Do.	Do	Kathazhi	1964	20·23	50·0	Do.	..
18 Cuddalore	Kurinjipadi	Karunguli	1961	40·47	100·0	Do.	..
19 Chidamabaram	Komaratchi	Colroon River near Puliankudi village.	1963	40·47	100·0	Miscellaneous species—40 acres Casuarina—60 acres.	..
20 Do.	Do.	Colroon River Arasur	1964	20·23	50·0	....	..
21 Do.	Kattumannarkoil	Andipalayam	1963	20·23	50·0	Babul and miscellaneous species.	..
22 Do.	Do.	Kondasamudram	1963	20·23	50·0	Do.	..
23 Do.	Do.	Kurmangalam	1964	20·23	50·0	..	..
		Total ..		611·04	150·00		

ABSTRACT FOR THE LIST OF PLANTATIONS IN CUDDALORE SOUTH FOREST DIVISION FROM 1956 TO 1964.

Serial number and Nature of plantation.		Total area tackled — Hectares.	Acres.	Remarks.
	(1)	(2)	(3)	(4)
I	Cashew	5,865·90	14,495·00	Including 144 acres old kumri in Kangiruppu R.F. Bit I, II and Ammeri R.F.
II	Casuarina	155·40	384·00	Sathiavadi and other Farm Forestry Casurina areas are not included.
III	Rehabilitation Working Circle (up to 1962 areas).	4,368·17	10,794·00	....
IIIA	Rehabilitation Working Circle (1963 and 1964 areas).	287·72	711·00	....
IV	Eucalyptus	436·25	1,078·00	....
V	Teak	1·01	2·5	....
VI	Farm Forestry areas	1,602·55	3,960·00	....

APPENDIX VII.

DIVISION OF THE AREA INTO INDIVIDUAL PLOTS (SALE UNITS), THEIR AREA AND THE YEARS AND AREA OF SOIL CONSERVATION WORKS AND KUMRI IN CASHEW WORKING CIRCLE.

Year.	Coupe number.	Area in Hectares.	Name of the Reserved Forest.	Number of plots.	Plots. I	II	III	IV	V	VI	VII	VIII	IX	X	Total.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
					A. Killiruppu Series.										
1956 ..	I ..	206·39	Kangiruppu Bit I	10	17·00	19·02	18·21	19·43	20·23	20·64	20·23	24·28	30·35	17·00	206·39
			Soil Conservation years ..		(1964)	(1964)	(1964)	(1963 –64)	(1963 –64)	(1963 –64)	(1963)	..	..	(1963)	..
			Kumri		..	..	..	..	..	..	..	..	..	..	86·20
1957 ..	II ..	234·72	Kangiruppu Bit I	10	23·47	28·33	20·23	26·30	24·28	22·27	21·85	19·43	24·28	24·28	234·72
			Year of Soil Conservation ..		1964	1963 –64	1963	1963	1963	1963	Part 1963	..	..	..	..
			Kumri		..	..	..	..	..	..	..	..	..	..	..
1958 ..	III ..	206·39	Kangiruppu Bit I	10	12·56	20·23	21·45	19·02	19·43	29·54	21·04	30·76	15·78	16·59	206·39
			Year of Soil Conservation ..		Part 1964	Part 1964	Part 1964	Part 1964	Part 1964	..	..	..	..	..	..
			Kumri		..	..	..	..	..	..	..	..	..	..	..
1959 ..	IV ..	236·34	Kangiruppu Bit I	10	25·09	23·07	21·04	21·04	20·23	23·07	24·28	16·59	22·27	39·66	236·34
			Year of Soil Conservation ..	Year 61–63	21·04	61–63 23·88	61–63 22·27	61–63 10·93	32·37 ha. done from 1962–63.					1961	39·64 124·65
			Kumri	..	..	..	61–62 2·02	61–62 12·14	..	..	..	..	..	..	..
1960 ..	V ..	122·62	Kangiruppu Bit I	6	17·00	20·64	20·64	20·64	24·28	19·42	..	..	..	..	122·62
			Year of Soil Conservation ..	..	..	..	..	..	..	..	..	..	..	..	..
			Kumri	..	..	..	..	..	Only 40·87 ha. done from 1962–(63).						40·87
1961 ..	VI ..	53·42	Kangiruppu Bit I	1	53·42	..	..	..	..	..	..	..	..	..	53·42
			Year of Soil Conservation ..		1961	(In 1959, Plot No. 10 and 1961 Plot totally 76·89 ha. done).									
			Kumri	..	..	..	..	..	..	..	..	..	..	..	..

1962 ..	VII ..	6·07	Kangiruppu Bit I	1	6·07	..	..	..	..	..					6·07
			Year of Soil Conservation ..		..		Total Kumri=68·76 ha.								
			Kumri		..	..	..	..	..	..					
Old Kumri.	..	3·24	Kangiruppu Bit I	1	3·24	..	..	..	..	..	..	..	..	..	3·24
			Year of Soil Conservation ..		..	..	..	..	..	..	..	..	..	..	..
			Kumri	Done years not known.											
		1,069·19													

Soil Conservation.

1963	..	312·42
1964	..	161·87
1961	..	76·89
Total	..	551·18ha

B. Maruugur Series (No Soil Conservation Work done).

1956 ..	I ..	213·27	Kangiruppu Bit II	10	20·23	23·07	21·85	25·10	25·10	30·35	14·16	23·07	15·38	14·16	213·27
			Kumri		In 1962–63 86·20 ha. done.										86·20
1957 ..	II ..	210·43	Kangiruppu Bit II	10	23·07	17·50	19·02	17·00	15·38	20·64	22·66	14·16	26·71	34·89	210·43
			Kumri		In 1961–63 189·39 ha.										189·39
1958 ..	III ..	213·27	Kangiruppu Bit II	10	22·27	17·40	24·27	29·14	20·64	20·23	31·56	13·36	19·02	15·38	213·27
			Kumri		1960–62 = 23·07 ha. in 1960–61 6·07 ha. in 1961–62 134·76 ha. and in 1962–63 25·90 ha. done.										189·80
1959 ..	IV ..	190·67	Kangiruppu Bit II	10	32·37	12·55	12·14	10·12	24·28	25·09	19·83	26·30	14·16	19·83	190·67
			Kumri		In 1960–61 29·54 ha. in 1960–62 167·13 ha.										196·67
1960 ..	V ..	219·74	Kangiruppu Bit II	10	21·45	18·61	20·64	15·78	22·66	25·50	27·11	23·07	28·78	16·19	219·74
			Kumri		In 1960–62 10·12 ha. in 1960–61 16·59 ha. and in 1961–62 180·49 ha. done.										207·20
1950–51	Old Kumri.	10·12	Kangiruppu Bit II R.F.	Old Kumri—1.	10·12	..	..	..	..	..	..	..	..	..	10·12
1951–52	Do.	20·23	Do.	1	20·23	..	..	..	..	..	..	..	..	..	20·23
1952–53	Do.	10·12	Do.	1	10·12		Kumri total 914·59 ha. done								10·12
Year not known.	Do.	4·86	Do.	1	4·86	..	..	..	..	..	..	..	..	..	4·86
Total ..		1,098·71													

APPENDIX VII.

DIVISION OF THE AREA INTO INDIVIDUAL PLOTS (SALE UNITS), THEIR AREA AND THE YEARS AND AREA OF SOIL CONSERVATION WORKS AND KUMRI IN CASHEW WORKING CIRCLE.

Year.	Coupe number.	Area in Hectares.	Name of the Reserved Forest.	Number of plots.	Plots. I	II	III	IV	V	VI	VII	VIII	IX	X	Total.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
				C. Kuttady Series (No Kumri Done in Kuttady R.F.)											
195	I	210·43	Kuttady R.F.	10	11·33	14·58	26·30	25·09	28·32	17·00	19·83	19·42	27·11	21·46	210·43
			Kumri		..	..	..	..	..	..	..	..	..	..	..
1958	II	220·14	Kuttady R.F.	10	33·99	24·28	21·04	20·64	21·45	21·85	20·23	18·62	16·19	21·85	220·14
			Kumri		..	..	..	..	..	..	..	..	..	..	..
1959	III	217·71	Kallamedu R.F.	10	21·04	21·85	21·04	19·43	20·23	33·18	22·66	21·45	20·64	16·19	217·71
			Year of soil conservation ..			*Part.* 1964	*Part.* 1963–64 Incom-plete.	*Part.* 1963–64	*part.* 1963–64	1964	1964	1964	*Part.* 1964	*Part.* 1964	
			Kumri	Year.	1962–63 / 7·28	1962–63 / 4·05	1962–63 / 6·88	1962–63 / 4·05	1959–61 / 19·04	1960–62 / 32·37	1961–62 / 5·67	1961–62 / 1·62	1961–62 / 3·24	1961–62 / 5·26	178·88
								1962–64 / 19·42			1961–63 / 15·75	1961–63 / 21·04	1961–63 / 19·42	1961–63 / 13·76	42·49
1960	IV	42·49	Kallamedu R.F.	2	21·04 *part.*	21·45	..	..	..						
			Year of soil conservation ..		1964	1963–64				Year of soil conservation done in Kallamedu R.F. *Area.* 1963 1964 } 260·21 ha.					
			Kumri		1962–63	17·00 ha. done.									17·00
1961	V	48·96	Kuttady R.F.	2	24·28	24·68	..	..	..	..	..	..	..	..	48·96
			Year of soil conservation ..		Not done.					(Soil work done in out of regeneration area also).					
1962	VI	24·28	Kuttady R.F.	1	24·28	..	..	..	..	..	..	..	..	..	24.28
Total	..	764·01		35											

Total kumri in Kallamedu : 195·88 ha. done.

Year.	Coupe number.	Area in hectares.	Name of the Reserved Forest.	Number of plots.	Plots. I	II	III	IV	V	VI	VII	VIII
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
					D. Palakollai Series.							
1956	I	140·82	Semakottai North ..	7	13·76	19·42	20·23	16·19 *Part.*	19·42 *Part.*	21·85	29·95	..
			Year of soil conservation.					1964	1964	1964	1964	
			Kumri	..	1959—61 : 50·18 ha ; 1960—61 : 68·80 ha. done.							
1957	II	193·03 and 72·44	Semakottai North ..	14	12·95	20·23	17·00	19·02	20·23	20·23	20·23	20·23
		265·47	Kumri	..	1960—62 : 106·03 ha ; 1961—63 : 83·37 ha ; 1961–62 : 8·90 ha. done.							
1958	III	201·94	Semakottai North ..	16	12·55	12·14	12·95	12·95	12·95	12·95	12·95	12·95
			Kumri		1960—62 : 35·21 ha ; 1961–62 : 154·99 ha. done.							
1959	IV	221·36	Semakottai North ..	12	18·21	18·21	18·21	18·21	12·14	18·21	18·21	18·21
			Kumri		1961–62 : 10·52 ha. ; 1961—63 : 133·95 ha. done.							
1960	V	123·43	Semakottai North ..	2	58·27	65·16	..	..		..	..	..
			Year of soil conservation,		1964	1963–64						
			Kumri		1961—63 : 60·70 ha. ; 1960—62 : 72·84 ha. done.							
1965	VI	161·87	Velangulam R.F.	6	161·87 } Newly proposed area by the Working Plan.							
1966	VII	109·37	Velangulam R.F.	8	109·37 }							
Total ..		1,224·16		65								

APPENDIX VII—*cont.*

DIVISION OF THE AREA INTO INDIVIDUAL PLOTS (SALE UNITS), THEIR AREA AND THE YEARS AND AREA OF SOILS CONSERVATION WORKS AND KUMRI IN CASHEW WORKING CIRCLE—*cont.*

Year.	*Coupe number.*	*Area in hectares.*	*Name of the Reserved Forest.*	*Plots—cont.* IX	X	XI	XII	XIII	XIV	XV	XVI	*Total.*
(1)	(2)	(3)	(4)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
				D. Palakollai Series—cont.								
1956	I	140·82	Semakottai North ..	..	..	..	..	..	..	..	..	140·82
			Year of soil conservation.	..	..	..	..	..	..	..	..	..
			Kumri	1959—61 : 50·18 ha. ; 1960—61 : 68·80 ha. done.								118·98
19 7	II	193·03 and 72·44	Semakottai	19·43	23·48	21·85 (1957 part of coupe II)	20·23	17·00	13·36	..	..	265·47
			Kumri	..	..	1957	1957	1957	1957	..	..	270·74
		265·47										
1958	III	201·94	Semakottai North ..	12·95	12·95	12·95	12·95	13·76	13·76	13·76	13·76	201·94
			Kumri	1960—1961 : 35·21 ha. ; 1962–62 : 154·99 ha. done.								190·20
1959	IV	221·36	Semakottai North ..	18·21	20·23	19·43	23·88	..	..	..	..	221·36
			Kumri	1961–62 : 10·52 ha. ; 1961—63 : 133·95 ha. done.								144·47
1960	V	123·43	Semakottai North ..	..	..	..	..	..	..	..	..	123·43
			Year of soil conservation.		Soil Conservation.		..	..	..	..	..	
			Kumri		1963	33·59						
					1964	157·02						
					Total	190·61 ha.						
1965	VI	161·87	Velangulam R.F.	..	..	..	..	..	..	..	161·87	151·76
1966	VII	109·37	Velangulam R.F.	..	..	..	..	..	..	..	109·37	
Total		1,224·16										

Total Kumri : 857·93 ha. done.

Year.	Coupe number.	Area in hecartes.	Name of the Reserved Forest.	Number of plots.	Plots. I	II	III	IV	V	VI	VII	VIII
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
					E. Mudanai Series.							
1956	I	185·34	Ammeri R.F.	8	20·23	24·28	18·21	22·27	20·64	44·51	16·59	18·61
					No soil work on Kumri done.							
1957	II	173·20	Marimanam R.F.	13	19·43	17·00	15·38	16·19	10·52	7·28	6·88	19·43
			Kumri		In 1961–62 : 48·56 ha. and in 1961—63 : 121·41 ha.							
1958	III	157·82	Narimanam R.F. ..	8	18·21	22·66	21·04	16·19	17·40	24·28	29·14	8·90
			Kumri		In 1960–61 : 4·45 ha. and in 1960—62 : 88·63 ha. done.							
1959	IV	208·00	Semakottai Central R.F.	12	19·42	20·23	17·81	10·93	13·35	17·00	18·21	18·21
			Kumri		In 1961–62 : 87·41 ha. and in 1959–60 : 43·70 ha. and in 1962–63 : 15·78 ha. done.							
1960	V	205·17	Semakottai Central ..	10	20·24	21·04	21·04	17·40	21·54	21·04	24·28	21·45
			Kumri		In 1961—63 : 74·46 ha. and in 1961-62 : 12·55 ha. done and in 1959–60 : 37·23 ha. done.							
1961	VI	10·12	Narimanam R.F. ..	1	10·12	No. Kumri. No soil conservation work done.						
1962	VII	31·16	Do. ..	1	31·16		Do.					
1967	VIII	113·31	Ameri R.F.	6	113·31		Do.					
	Old Kumazi.	9·71	Do.	1	9·71	..	..	..	..	..	..	..
			Kumri		Years not known. Done.							
Total	—	1 093·83		60	kumari							

APPENDIX VII—*cont.*

DIVISION OF THE AREA INTO INDIVIDUAL PLOTS (SALE UNITS), THEIR AREA AND THE YEARS AND AREA OF SOIL CONSERVATION WORKS AND KUMRI IN CASHEW WORKING CIRCLE—*cont.*

Year.	*Coupe number.*	*Area in hectares.*	*Name of the Reserved Forest.*	*Plots.* IX	X	XI	XII	XIII	XIV	XV	XVI	*Total*
(1)	(2)	(3)	(4)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
				E. Mudanai Series—cont.								
1956	I	185·34	Ammeri R.F.	..	..	..	..	..	..	..	..	185·34
				No soil work on Kumri done.								
1957	II	173·20	Narimanam R.F.	13·35	12·54	14·16	13·35	7·69	..	..	..	173·20
			Kumri	In 1961-62 : 48·56 ha. and in 1961—63 : 121·41 ha. done.								161·97
1958	III	157·82	Narimanam R.F.	..	..	..	..	..	..	..	..	157·82
			Kumri	In 1960–61 : 4·45 ha. and in 1960—62 : 88·63 ha. done.								93·08
1959	IV	208·00	SemakottaiC entral R.F.	17·40	18·21	9·83	17·40	..	..	..	..	208·00
			Kumri	In 1961—63 : 87·41 ha. and in 1959-60 : 43·70 ha. and in 1962–63 : 15·78 ha. done.								146·89
1960	V	205·17	Semakottai Central ..	23·47	13·76	..	..	..	..	..	..	205·17
			Kumri	In 1961—63 : 74·46 ha. and in 1961-62 : 12·55 ha. done and in 1959—60 : 37·23 ha. done.								124·24
1961	VI	10·12	Narimanam R.F.	No Kumri. No soil conservation work done.								10·12
1962	VII	31·16	Do.		Do.							31·16
1967	VIII	9·71	Ammeri R.F.		Do.							113·31
	old Kumri.	9·71	Do.	..	..	..	..	..	..	..	..	9·71
		——	Kumri	Year not known. Done. Total Kumrai 535·89 ha.								9·71
Total ..		1 093·83										

Year.	Coupe number.	Area in hectares.	Name of the Reserved Forest.	Number of Plots.	Plots. I	II	III	IV	V	VI	VII	VIII
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
					F. Mattur Series.							
1956	I	252·11	Semakottai South R.F. ..	10	73·65	19·02	19·42	19·42	19·42	19·42	19·83	19·83
			Kumri		1961—63 : 76·19 ha. 1961-62 : 80·55 ha. 1962—64 : 27·52 ha. 1962–63 : 19·02 ha. done.							
1957	II	172·80	Semakottai South R.F.	8	16·59	18·21	18·61	21·85	22·27	24·28	24·28	24·28
			Kumri		1961—63 : 104·41 ha. 1962-63 : 4·86 ha. 1963—64 : 15·38 ha. done.							
1958	III	219·34	Semakottai South R.F. ..	13	13·76	13·76	16·59	16·59	17·00	17·00	17·00	17·40
			Kumri		1961—63 : 124·64 ha. 1962-63 : 6·07 ha. 1962-63 : 24·69 ha. done.							
1959	IV	155·80	Semakottai South R.F. ..	7	20·23	21·04	23·07	23·07	17·00	24·28	27·11	..
			Year of soil conservation.		1963							
			Kumri		1962-63 : 97·12 ha. done.				196·43 ha.—1963.			
1960	V	200·31	Semakottai South R.F. ..	10	16·78	17·00	18·61	21·45	22·27	20·23	21·04	21·04
			Year of soil conservation.		1963							
			Kumri		Not done.							
Total ..		1,000·36		48								

APPENDIX VII—*cont.*

DIVISION OF THE AREA INTO INDIVIDUAL PLOTS (SALE UNITS), THEIR AREA AND THE YEARS AND AREA OF SOIL CONSERVATION WORKS AND KUMRI IN CASHEW WORKING CIRCLE—*cont.*

Year.	Coupe number.	Area in hectares.	Name of the Reserved Forest.	Plots. IX	X	XI	XII	XIII	XIV	XV	XVI	Total.
(1)	(2)	(3)	(4)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
				F. Mattur Series—cont.								
1956	I	252·11	Semakottai South R.F.	19·83	22·27	..	..	..	..	..	..	[illegible]·11
			Kumri	1961—63 : 76·19 ha. 1961—62 : 30·55 ha. 1962—64 : 27·52 ha. 1962—62 : 19·02 ha. done.								15[illegible]·80
1957	II	172·80	Semakottai South R.F. ..	26·71	..	..	..	..	..	..	..	172·80
			Kumri	1961—63 : 104·41 ha. 1962—63 ; ha. 1663—64 : 15·38 ha. done.								124·65
1958	III	219·34	Semakottai South R.F. ..	17·40	17·40	17·40	17·40	20·64	..	..	..	219·34
			Kumri	1961—63 : 124·64 ha. 1962—63 : 6·07 ha. 1962—63 : 24·69 ha. done.								155·40
1959	IV	155·80	Semakottai South R.F. ..	..	..	..	..	..	..	..	..	155·80
			Year of soil conservation.	1963			19·43 ha. 1963.					39·66
			Kumri	1962—63 : 97·12 ha. done.								97·12
1960	V	200·31	Semakottai South R.F. ..	21·85	21·04	..	..	..	..	..	..	200·31
			Year of soil conservation.	1963								15·78
			Kumri	Not done.								
Total ..		1,000·36										

Soil conservation.
1969 55·44 ha.

APPENDIX VIII.

A (i) Outturn and Prices Obtained from Cashew Natural Trees.

Serial number.	*Name of lease.*	*Amount realised.*	*Yield obtained in Kgs.*	*Remarks.*
(1)	(2)	(3) RS. P.	(4)	(5)
	1954–55.			
I	(1) Kangiruppu Bit I R.F.	35·00	52·16	....
	(2) Kangiruppu Bit II R.F.	630·00	793·78	....
			845·94	
	1955–56.			
II	(1) Kangiruppu Bit I R.F.	37·00	No removals.	....
	(2) Kangiruppu Bit II R.F.	645·00	409·36	....
	(3) Narimanam	25·00	No removals.	....
			409·36	
	1956–57.			
III	(1) Kangiruppu Bit I R.F.	75·00	Not available.	....
	(2) Kangiruppu Bit II R.F.	615·00	430·91	....
			430·91	
	1957–58.			
IV	(1) Killai R.F.	85·00	Not available.	....
	(2) Kangiruppu R.F.	225·00	275·55	....
	(3) Narimanam	35·00	Not available.	....
	(4) Velangulam	538·00	938·02	....
	(5) Karmangudi	11·00	Not available.	....
			1,213·57	
	1958–59.			
V	(1) Ammeri..	332·00	407·09	....
	(2) Velangulam	751·00	1,240·00	....
	(3) Kangiruppu	500·00	356·04	....
	(4) Killai	56·00	63·28	....
	(5) Narimanam	40·00	77·88	....
			2,144·82	
	1959–60.			
VI	(1) Killai R.F.	50·00	47·63	....
	(2) Velangulam	225·00	340·17	....
	(3) Kallamedu (Cashew from Natural trees) ..	32·00	68·03	....
	(4) Narimanam (Excluding 1957–58 R.A.S.) ..	56·00	113·40	....
			569·23	

APPENDIX VIII—*cont.*

A (i) Outturn and Prices Obtained from Cashew Natural Trees—*cont.*

Serial number.	*Name of lease.*	*Amount realised.*	*Yield obtained in Kgs.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)
		RS. P.		
	1960–61.			
VII	(1) Kallamedu R. F. (except the cashew planted area).	260·00	286·82	....
	(2) Kangiruppu Bit I R.F. Natural tree in 1958, 1959 and 1960 (R.A.S.)	495·00	734·82	....
	(3) Kangiruppu Bit II R. F. Excluding Kumri Areas and 1956 (R.A.S.)	675·00	922·60	....
			1,944·30	
	1961–62.			
VIII	(1) Killai R.F.	25·00	104·32	....
	(2) Narimanam	15·00	248·11	....
	(3) Kangiruppu Bit I.R.F. 1960 C.R.A. and Natural trees.	550·00	766·55	....
	(4) Semakottai North 1960 C.R.A. Natural trees.	50·00	297·10	....
			1,416·08	
	1962–63.			
IX	*Nil.*			
	1963–64			
X	*Nil.*			
	Grand Total		8,974·21	

APPENDIX VIII.

A. (*ii*) Out-turn and Prices obtained from Departmental Cashew Plantations.

Serial number.	Name of lease.	Total area in ha.	Total amount realised.		Average per ha.		Total yield obtained in Kg.	Average per ha. Kg.
(1)	(2)	(3)	(4)		(5)		(6)	(7)
			RS.	P.	RS.	P.		
		1957.						
1	Kangiruppu Bit I Old Kumri	3·24 (8·0 acres).	410	00	126	54	697	215·1
2	Kangiruppu Bit II Kumri	10·12 (25·0 acres).	3,750	00	370	55	1,999	197·5
3	1952 Kangiruppu Bit II Kumri	10·12 (25·0 acres).	500	00	49	42	387	28·2
4	Kangiruppu Bit II Kumri	4·86 (12·0 acres).	1,320	00	271	60	1,097	22·5
5	1951, Kangiruppu Bit II Kumri	20·23 (50·0 acres).	1,350	00	66	73	766	37·8
6	1954, Ammeri R. F. Old Kumri	9·71 (24·0 acres).	275	00	28	31	Not Available.	Not Available.
		Total ..	7,605	00	..		4,946	..
		Average ..	..		152	19	..	102·2
		1958.						
1	Kangiruppu R. F. Bit I Old Kumri	3·24 (8·0 acres).	440	00	135	80	697	215·1
2	Kangiruppu R. F. Bit II Plot Old Kumri..	10·12 (25·0 acres).	950	00	93	87	165	16·3
3	Kangiruppu R. F. Bit II Old Kumri	4·86 (12·0 acres).	1,200	00	246	41	277	56·9
4	Kangiruppu R. F. Bit II Old Kumri	10·12 (25·0 acres).	2,410	00	238	14	1,334	131·7
5	Kangiruppu R. F. Bit II Old Kumri	20·23 (50·0 acres).	2,800	00	138	40	662	32·7
		Total ..	7,800	00	..		3,135	..
		Average. ..	..		170	52	..	90·5

APPENDIX VIII—*cont.*

A (ii) Outturn and Prices Obtained from Departmental Cashew Plantations—*cont.*

Serial number. (1)	*Name of lease.* (2)	*Total area in ha.* (3)	*Total amount realised.* (4) RS. P.	*Average per ha.* (5) RS. P.	*Total yield obtained in Kg.* (6)	*Average per ha /Kg.* (7)
		1959.				
1	Kangiruppu Bit I Kumri Natural Cashew trees and 1956 cashew plantation.	3·24 (8·0 acres).	875 00	270 06	1,078	331·1
2	Kangiruppu Bit II including 1956 Cashew Plantations (South) and including Kumri.	213·27 (527·0 acres).	600 00	2 81	65	3·5
3	Kangiruppu Bit I Kumri Plot formed by Kangiruppu Kumridars.	10·12 (25·0 acres).	1,750 00	172 92	2,044	201·9
4	Kangiruppu Bit II Kumri Plot	20·23 (50·0 acres).	3,000 00	148 24	2,253	111·3
5	Kangiruppu Bit II Kumri plot	4·86 (12·0 acres).	1,310 00	267 16	2,029	438·7
6	Kangiruppu Bit II Kumri Plot raised by Kangiruppu Kumridars.	10·12 (25·0 acres).	1,760 00	173 91	1,528	150·9
7	Ammeri R. F. including 1956 Cashew Plantation.. ..	10·12 (25·0 acres).	350 00	34 49	514	50·7
8	Semakottai South R. F. (including 1956 Cashew Plantation and Kumri).	252·12 (653·0 acres).	75 00	0 29	197	0·78
9	Semakottai North R. F. (including Semakottai North 1956 Cashew Plantation).	140·83 (348·0 acres).	52 00	0 36	86	0·61
		Total ..	9,772 00	..	10,489	..
		Average ..	..	118 95	..	143·3

1960.

1	Semakottai R. F. (including 1956 Semakottai North Cashew Plantation.	140·83 (348·0 acres).	201 00	1 42	100	0·71
2	Semakottai South R. F. including 1956 C.R.A. and Kumri Plots.	252·12 (625·0 acres).	350 00	1 38	109	0·40
3	Ammeri R. F. including 1956 Ammeri cashew regeneration areas.	9·71 (24·0 acres).	915 00	90 41	978	40·8
4	Semakottai R. F. (Semakottai South 1957 cashew plantation.	172·80 (427·0 acres).	240 00	1 38	24	0·14
5	Kangiruppu Bit I 1956 C.R.A.	3·24 (8·0 acres).	2,600 00	802 46	2,280	708·4
6	Kangiruppu R. F. Bit II Kumri Plot cultivated by the villagers of Kudiyiruppu in Kangiruppu Bit II R.F.	10·12 (25·0 acres).	3,330 00	329 05	2,124	209·9
7	Kangiruppu R.F. Bit II Kumri Plot	20·23 (50·0 acres).	2,510 00	124 07	1,086	108·1
8	Kangiruppu Bit II R. F. Kumri Plot	4·86 (12·0 acres).	1,015 00	208 99	786	161·7
9	Kangiruppu Bit II Kumri Plot raised by Kangiruppu villagers in Kangiruppu Bit II R.F.	10·12 (25·0 acres).	1,225 00	121 04	1986	196·2
10	Kangiruppu Bit II R. F. (1957 Cashew Plantation in Kangiruppu Bit-II R.F.	210·44 (520·0 acres).	320 00	1 52	694	3·3
11	Semakottai North R.F.	72·44 (179·0 acres).	1,250 00	17 25	590	8·1
12	Kangiruppu Bit I R. F.	234·71 (580·0 acres).	465 00	1 78	116	0·49
13	Narimanam R. F. including 1957 cashew Plantation but excluding the 1958 cashew plantation.	173·21 (428·0 acres).	325 00	1 87	850	4·8
		Total ..	14,746 00	..	11,732	..
		Average ..	..	70 19	..	110·7

APPENDIX VIII—*cont.*

A (ii) OUTTURN AND PRICES OBTAINED FROM DEPARTMENTAL CASHEW PLANTATIONS—*cont.*

Serial number.	*Name of lease.*	*Total area in ha.*	*Total amount realised.*	*Average per ha.*	*Total yield obtained in Kg.*	*Average per ha. Kg.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
		1961.	RS. P.	RS. P.		
1	1956 Semakottai North R. F. Blocks I to VIII including natural trees.	140·83 (348·0 acres).	570 00	4 05	868	6·00
2	1957 Samakottai North C.R.A. Blocks I to X	193·03 (477·0 acres).	808 00	1 58	440	2·3
3	1957 Semakottai North Kumri	72·44 (179·0 acres).	1,150 00	15 80	147	2·0
4	1959 Semakottai North R.F. C.R.A. Blocks I to XVI including Natural trees.	201·94 (499·0 acres).	625 00	3 08	884	4·32
5	1959 Semakottai North R.F. C.R.A. Blocks 1 to X including Natrual trees.	221·36 (547·0 acres).	486 00	2 19	1,877	8·47
6	1957 Semakottai South C.R.A. Blocks I, I A, I-B to X, XC including natural trees.	252·12 (623·0 acres).	823 00	3 26	2,012	7·98
7	1957 Semakottai South C.R.A. Blocks I to X, XI to XVI including natural trees.	172·80 (427·0 acres).	350 00	2 02	746	4·3
8	1958 Semakottai South C.R.A. including natural trees.	219·34 (542·0 acres).	125 00	0 56	247	1·13
9	1950 Madurai Series C.R.A. Block	208·01 (514·0 acres).	327 00	1 68	757	3·63
10	1956 Ammeri C.R.A. including natural trees	155·35 (458·0 acres).	360 00	1 97	591	3·8
11	1954 Ammeri Kumri Area	9·71 (24·0 acres).	720 00	75 18	959	98·76
12	1957 Narimanam C.R.A. including natural trees ..	173·21 (428·0 acres).	1,630 00	9 41	1,871	10·8
13	1958 Narimanam C.R. A. including natural trees ..	157·83 (393·0 acres).	385 00	2 42	269	1·7
14	1956 Kangiruppu Bit I, Blocks I to X including natural trees.	206·39 (510·0 acres).	1,995 00	9 66	3,084	14·94
15	1957 Kangiruppu Bit I., R.F. including natural trees ..	234·71 (580·0 acres).	500 00	1 90	346	1·47

16	Kangiruppu C. R. A. Bit II	213·27 (527·0 acres).	800 00	3 73	1,089	5·1
17	1957 Kangiruppu C. R. A. Bit II	210·43 (530·0 acres).	1,020 00	4·84	2,321	10·1
18	1958 Kangiruppu C. R. A. Bit I	206·39 (510·0 a res).	155 00	0 66	855	1·72
19	1958 Kangiruppu C.R.A. Bit II including natural trees.	213·27 (527·0 acres).	155 00	0 71	189	0·88
20	1959 Kangiruppu C.R.A. Bit I	236·34 (584·0 acres).	115 00	0 49	55	0·23
21	1959 Kangiruppu C. R. A. Bit II	196·68 (486·0 acres).	250 00	1 26	189	0·96
22	Kangiruppu C.R.A. Bit II	219·74 (543·0 acres).	50 00	0 23	121	0·55
23	Kangiruppu C.R.A. Bit I Kumri	3·24 (8·0 acres).	725 00	223 03	743	229·32
24	Kangiruppu C. R. A. Bit II Kumri	4·86 (12·0 acres).	910 00	187 87	947	194·85
25	Kangiruppu C.R.A. Bit II Kumri	10·12 (25·0 acres).	2,115 00	209 04	2,038	201·38
26	Kangiruppu C. R. A. Bit II, Kumri	20·23 (50·0 acres).	2,400 00	118 60	4,211	208·15
27	Kangiruppu C.R.A. Bit II, Kumri	10·12 (25·0 acres).	1,405 00	138 87	574	56·71
28	1959 C.R.A. Kallamedu R. F. (including natural trees).	217·72 (583·0 acres).	330 00	1 50	346	1·59
29	1957 C. R. A. Kuttady R. F. (including natural trees).	210·44 (530·0 acres).	115 00	0 54	198	0·94
30	1958 C.R.A. Including natural trees	220·15 (544·0 acres).	26 00	0 12	103	0·47
		Total. ..	20,940 00	..	28,577	..
		Average ..	..	34 22	..	86·15

APPENDIX VIII—*cont.*

A (ii) Outturn and Prices obtained from Departmental Cashew Plantations—*cont.*

Serial number.	Name of lease.	Total area in hectares.	Total amount realised.	Average per hectares.	Total yield obtained in Kg.	Average per hectares./Kg.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			RS. P.	RS. P.		
		1962.				
I. *Semakottai North*—						
1	1956 ..	140·83 (348·0 acres).	3,080 00	21·87	390	2·76
2	1957 ..	193·03 (477·0 acres).	1,540 00	7·98	827	4·28
3	1957 Kumri	72·44 (179·0 acres).	3,065 00	42·80	1,413	19·5
4	1958 ..	201·94 (499·0 acres).	3,510 00	17·37	2,440	12·08
5	1959 ..	221·36 (547·0 acres).	5,735 00	25·89	786	3·10
6	1960 Kumri	123·48 (305·0 acres).	135 00	1·09	48	0·38
II. *Semakottai South*—						
7	1956 ..	252·12 (623·0 acres.)	1,232 00	4·87	778	3·08
8	1957	172·80 (427·0 acres).	830 00	4·71	839	1·96
9	1958	219·34 (542·0 acres.)	515 00	2·27	337	1·53
10	1959 ..	155·80 (385·0 acres).	300 00	1·92	139	0·87
11	1960 ..	200·32 (495·0 acres).	75 00	0·37	85	0·04
III. *Mudanai*—						
12	1954 Ammeri Kumri	9·71 (24·0 acres).	1,260 00	129·67	15,652	1610·6
13	1956 Ammeri	155·35 (458·0 acres).	2,325 00	12·48	1,658	10·67

14	1959 Semakottai	208·01 (514·0 acres).	3,307 00	15·89	753	8·61
15	1960 Semakottai	205·18 (507·0 acres).	205 00	0·99	N.A.	N.A.
IV *Narimanam*—						
16	1957	173·21 (428·0 acres).	2,915 00	16·83	3,536	20·41
17	1958	157·83 (390·0 acres).	760 00	4·82	1,190	7·53
18	1961	41·88 (102·0 acres).	45 00	1·11	N.A.	..
19	1962					
V. *Kuttady*—						
20	1957	210·44 (520·0 acres).	180 00	0·84	692	8·2
21	1958	220·15 (544·0 acres).	100 00	0·45	220	1·1
22	1960	N.A.	N.A.	N.A.	N.A.	N.A.
VI. *Kallamedu*—						
23	1959	217·72 (538·0 acres).	1,250 00	5·78	237	1·3
24	1960	N.A.	N.A.	N.A.	N.A.	N.A.
VII. *Kangiruppu R. F. Bit I.*—						
25	1956	206·39 (510·0 acres).	6,005 00	29 76	6,487	31 4
26	1957	234·71 (580·0 acres).	1,630 00	6 94	2,399	10·2
27	1958	206·39 (510·0 acres).	1,065 00	5 14	631	8·0
28	1959	236·34 (584·0 acres).	285 00	1 21	424	1.8
29	1960	122·62 (303·0 acres).	575 00	4 70	1,586	12·9
30	8 acres Kumri	3·24 (8·0 acres).	840 00	259 45	552	170·4

APPENDIX VIII—*cont.*

A (ii) OUTTURN AND PRICES OBTAINED FROM DEPARTMENTAL CASHEW PLANTATIONS—*cont.*

Serial number. (1)	*Name of lease.* (2)	*Total area in hectares.* (3)	*Total amount realised.* (4)	*Average per hectares.* (5)	*Total yield obtained in Kg.* (6)	*Average per hectares/Kg.* (7)
		1962—*cont.*	RS. P.	RS. P.		
VIII.	*Kangiruppu R. F. Bit II*—					
31	1956	213·27 (527·0 acres).	5,950 00	27 89	4,783	22·4
32	1957	210·44 (52·0 acres).	2,120 00	10 05	1,122	5·3
33	1958	213·27 (527·0 acres).	415 00	1 92	645	3·2
34	1959	196·68 (486·0 acres).	1,650 00	8 40	1,522	7·7
35	1960	219·74 (543·0 acres).	290 00	1 31	276	1·2
	Kumri Areas—					
36	.. ..	20·23 (50·0 acres).	2,435 00	120 33	2,212	109·3
37	.. ..	4·86 (12·0 acres).	920 00	189 32	844	70·7
38	.. ..	10·12 (24·0 acres).	1,420 00	146 13	698	69·6
39	.. ..	10·12 (25·0 acres).	2,030 00	200 64	1,364	134·7
		Total ..	58,894 00	..	56,616	..
		Average ..	..	36 01	..	65·5
		1963.				
I.	*Kangiruppu R. F. Bit I*—					
1	C.R.A. 1956	206·39 (510·0 acres).	7,800 00	37 78	N.A.	N.A.

2	C.R.A. 1957	234·71 (580·0 acres).	3,800	00	14	05	3,425	10·3
3	C.R.A. 1958	206·39 (510·0 acres).	3,442	75	16	68	3,790	18·4
4	C.R.A. 1959	236·34 (584·0 acres).	915	00	4	27	2,426	10·2
5	C.R.A. 1960	122·62 (303·0 acres).	1,545	00	14	25	1,225	9·9
II. *Kangiruppu Bit II*—								
6	C.R.A. 1956	213·27 (527·0 acres).	14,150	00	66	35	8,254	38·07
7	C.R.A. 1957	210·44 (520·0 acres).	6,905	00	82	81	8,997	18·9
8	C.R.A. 1958	213·27 (527·0 acres).	5,150	00	24	14	1,270	5·9
9	C.R.A. 1959	195·68 (486·0 acres).	7,600	00	38	65	5,345	22·1
10	C.R.A. 1960	219·74 (543·0 acres).	580	00	2	64	760	3·4
III. *Semakottai North*—								
11	C.R.A. 1956	140·83 (348·0 acres).	5,235	00	87	16	5,661	10·2
12	C.R.A. 1957	193·03 (477·0 acres).	6,100	00	81	60	N.A.	N.A.
		72·44 (179·0 acres).	6,000	00	82	85		
13	C.R.A. 1958	201·94 (499·0 acres).	5,369	79	26	59	4,607	22·08
14	C.R.A. 1959	221·36 (547·0 acres).	10,625	00	47	99	980	4·4
15	C.R.A. 1960	123·43 (305·0 acres).	300	00	2	43	306	2·4

APPENDIX VIII—*cont.*

A (ii) OUTTURN AND PRICES OBTAINED FROM DEPARTMENTAL CASHEW PLANTATIONS—*cont.*

Serial number. (1)	Name of lease. (2)	Total area in hectares. (3)	Total amount realised. (4)	Average per hectares. (5)	Total yield obtained in Kg. (6)	Average per hectares./kg. (7)
		1963—*cont.*	RS. P.	RS. P.		
IV. Semakottai South—						
16	C. R. A. 1956 Ammeri	252·12 (623·0 acres).	2,515 00	9 98	3,526	13·9
17	C. R. A. 1957	172·80 (427·0 acres).	1,620 00	9 37	3,479	20·1
18	C. R. A. 1958	219·34 (542·0 acres).	3,350 00	15 27	4,588	25.9
19	C. R. A. 1959	155·80 (385·0 acres).	890 00	6 85	1,099	7·1
20	C. R. A. 1960	200·32 (495·0 acres).	350 00	1 75	650	3·2
V. Mudanai Series—						
21	C. R. A. 1956 Ammeria	155·35 (458·0 acres).	9,300 00	50 16	6,466	41·6
22	C. R. A. 1957 Narimanam	173·21 (428·0 acres).	8,950 00	51 67	997	5·7
23	C. R. A. 1959 Semakottai	208·01 (514·0 acres).	8,366 00	40 23	4,939	23·2
24	C. R. A. 1959 Narimanam	157·83 (390·0 acres).	3,890 00	24 96	N.A.	N.A.
25	C. R. A. 1960 Semakottai	205·18 (507·0 acres).	860 00	3 71	768	3·7
26	C. R. A. 1961 Narimanam .. .. }	41·98 (102·0 acres).	160 00	3 85	53	1·3
27	C. R. A. 1962 Narimanam .. .. }					
VI. Kuttady Kallamedu—						
28	C. R. A. 1957 Kuttady	210·44 (520·0 acres).	260 00	1 24	612	2·9
29	C. R. A. 1959 Kallamedu	217·72 (538·0 acres).	100 00	28 02	3,337	15·3

30	C. R. A. 1960 Kallamedu	42·49 (105·0 acres).	180 00	4 23	612	14·4
31	C. R. A. 1962 Kallamedu	24·28 (60·00 acres).	N.A.	N.A.	N.A.	N A.
32	C. R. A. 1958 Kuttady	220·15 (544·0 acres).	205 00	0·74	425	8·5
33	C. R. A. 1960 Kuttady	48·97 (121·0 acres).				
Others—						
34	1954 Ammeri Old Kumri	10·12 (24·0 acres).	8,500 00	360 22	N.A.	N.A.
35	Kangiruppu Bit I Kumri	3·24 (8·0 acres).	857 00	264 72	508	156·8
36	Kangiruppu Bit II Kumri	20·23 (50·0 acres).	4,200 00	207 58	1,460	72·2
37	Kangiruppu Bit II Kumri areas	4·86 (12·0 acres).	1,180 00	242 97	745	153·3
38	Kangiruppu (Kudiyiruppu) Kumri	10·12 (25·0 acres).	1,560 00	166 19	850	83·9
39	Kangiruppu (by Kangiruppu villagers Kumri)	10·12 (25·0 acres).	2,250 00	222 89	767	75·7
		Total ..	1,45,560 00	..	77,927	..
		Average ..	..	60·99	..	29·2
			1964.			
1	1954 Semakottai North C. R. A. (Plot I to VII) ..	140·83 (348·0 acres).	14,660 00	104 06	N.A.	N.A.
2	1957 Semakottai North C. R. A. (Plot I to X) ..	193·03 (477·0 acres).	14,840 00	77 86	N.A.	N.A.
3	1957 Semakottai North Kumri	72·44 (179·0 acres).	7,550 00	104 18	N.A.	N A.
4	1958 Semakottai North C. R. A. (Plot I to XVI) ..	201·94 (499·0 acres).	18,520 00	91 68	N.A.	N.A.

APPENDIX VIII—*cont.*

A (ii) OUTTURN AND PRICES OBTAINED FROM DEPARTMENTAL CASHEW PLANTATIONS—*cont.*

Serial number. (1)	*Name of lease.* (2)	*Total area in hectares.* (3)	*Total amount realised.* (4)	*Average per hectares.* (5)	*Total yield obtained in Kg.* (6)	*Average per hectares./Kg.* (7)
		1964—*cont.*	RS. P.	RS. P.		
5	1959 Semakottai North C. R. A. (Plot I to X) including Kumri areas.	221·36 (547·0 acres).	24,750 00	111 76	Not available.	Not Available.
6	1960 Semakottai North C. R. A.	123·43 (305·0 acres).	3,960 00	32 06	Do.	Do.
7	1956 Semakottai South C. R. A. (Plot I to XA) ..	252·12 (623·0 acres).	17,800 00	70 57	Do.	Do.
8	1957 Semakottai South C. R. A. (Plot I to XVIA) ..	172·80 (427·0 acres).	2,900 00	57 27	Do.	Do.
9	1958 Semakottai South C. R. A.	219·34 (542·0 acres).	13,100·00	59 69	Do.	Do.
10	1959 Semakottai South C.R.A. (Plot I to VII) ..	155·80 (385·0 acres).	15,000 00	96 23	Do.	Do.
11	1960 Semakottai South C.R.A.	200·32 (495·0 acres).	4,800 00	23 95	Do.	Do.
12	1959 Mudanai C. R. A. (Plot I to X) including Kumri areas.	208·01 (514·0 acres).	28,215 00	135 58	Do.	Do.
13	1960 Mudanai C. R. A. (Plot I to X)	205·18 (507·0 acres).	6,350 00	30 95	Do.	Do.
14	1956 Ammeri C. R. A. Kumri	9·71 (24·0 acres).	8,000 00	808 75	Do.	Do.
15	1955 Ammeri C. R. A.	155·35 (458·0 acres).	10,375 00	55 95	Do.	Do.
16	1957 Narimanam C. R. A. (Plot I to XIII)	173·21 (428·0 acres).	15,940 00	91 98	Do.	Do.
17	1958 Narimanam C. R. A. (Plot I to XA)	157·83 (390·0 acres).	11,200 00	70 93	Do.	Do.
18	1961 and 1962 Narimanam C. R. As.	41·98 (102·0 acres).	600 00	14 52	Do.	Do.
19	1959 Kallamedu C. R. A.	217·72 (538·0 acres).	15,250 00	70 02	Do.	Do.

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20	1960 Kallamedu	42·49 (105·0 acres)	420 00	9 88	Do.	Do.
21	1957 Kuttady C. R. A.	210·44 (520·0 acres)	900 00	4 27	Do.	Do.
22	1958 Kuttady C. R. A.	220·15 (544·0 acres)	740 00	3 36	Do.	Do.
23	1960 Kuttady C. R. A.	48·97 (121·0 acres)	510 00	10 42	Do.	Do.
24	1956 Kangiruppu C. R. A. (Plot I to X)	206·39 (510·0 acres)	11,040 00	53 47	Do.	Do.
25	1957 Kangiruppu Bit I (Plot I to X)	234·71 (580·0 acres)	4,550 00	19 39	Do.	Do.
26	1958 Kangiruppu Bit I C. R. A. (Plot I to X) ..	206.39 (510·0 acres)	6,050 00	29 29	Do.	Do.
27	1959 Kangiruppu Bit I C. R. A. (Plot I to VI) ..	236·34 (534·0 acres)	23,250 00	98 33	Do.	Do.
28	1960 Kangiruppu Bit I C.R.A. (Plot I to VI)	122·62 (303·0 acres)	10,075 00	82 13	Do.	Do.
29	1960 Kangiruppu Bit I C.R.A. Kumri	3·24 (8·0 acres)	735 00	226 94	Do.	Do.
30	1956 Kangiruppu Bit II (Plot I to X)	213·27 (527·0 acres)	17,040 00	79 85	Do.	Do.
31	1957 Kangiruppu Bit II (Plot I to X)	210·44 (520·0 acres)	17,760 00	84 37	Do.	Do.
32	1958 Kangiruppu Bit II (Plot I to X)	213·27 (527·0 acres)	19,560 00	91 69	Do.	Do.
33	1959 Kangiruppu Bit II C.R.A. (Plot I to X) ..	195·68 (486·0 acres)	38,105 00	194 17	Do.	Do.
34	1960 Kangiruppu Bit II C.R.A. (Plot I to X) ..	219·74 (543·0 acres)	9,560 00	43 51	Do.	Do.
35	Kangiruppu Bit II C.R.A. Kumri plot	20·23 (50·0 acres)	4,215 00	208 30	Do.	Do.
36	Kangiruppu Bit II Kumri plot	4·68 (12·0 acres)	1,510 00	310 00	Do.	Do.
37	Kangiruppu Bit II R.F. Kumri Plot raised by Kangiruppu villagers.	10·12 (25·0 acres)	1,405 00	138 81	Do.	Do.
38	Kangiruppu Bit II C.R.A. Kumri Plot raised by Kangiruppu villagers.	10·12 (25·0 acres)	1,810 00	178 83	Do.	Do.
39	Natural trees in Killai Reserved Forest.		Not Available.	Not available.		
		Total ..	4,04,850 00	3,475 00		
		Average ..	..	91·45		

N. B. One Madras Measure = 2·7 Lbs. One Kilogram = 2·205 lbs.

APPENDIX VIII—cont.

(*Vide Section* 5.)

B. OUTTURN AND PRICES OBTAINED FROM FUEL COUPES.

1954—55.

Serial number and name of the series.	Fuel coupe number.	Area in hectares.	Price per hectare.	Total yield obtained in tonnes.	Total amount in Rupees.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Cuddalore South Division.			RS. P.			
1 Pichavaram	VI	10·52 (26·0 acres).	173·00	Not available.	182·00	....
2 Alwarmalai	No demand..					....
3 Tagarai	XII	33·99 (84·0 acres).	14·82	176·0	504·00	....
4 Edaikal	Closed for teu years in South Arcot Collector's D. Dis 45251/51. dated 12th November 1952 and District Forest Officers No. 883/52 and 2602/51-L.					....
5 Manakollai (in Semakottai Reserved Forest).	Sale dropped.					....
6 Kotteri (in Semakottai Reserved Forest) ..	Do.					....
7 Karmangudi	Do.					....
8 Kattumailur	Do.					....
9 Vellangulam	Do.					....
10 Parur	Not prescribed under the working plans.					....
11 Kuppanatham	Nil.					....
12 Pandur	Do.					....
13 Siruppakkam	Nil—Not prescribed under the working plan					....
14 Kuthakudi	Closed for ten years.					....
14A Rangappanur	III	37·64 (93·0 acres)	7·41	Not avail	[illegible]	....
Do.	V	36·83 (91·0 acres).	12·35	Do.	[illegible]	....
Do.	VI	38·40 (94·0 acres)	9·88	Do.	[illegible]	....

Serial number and name of the series.	1955-56. Fuel coupe number.	Area in hectares.	Price per hectares.	Total yield obtained in tonnes.	Total amount in rupees.	Remarks.
	(7)	(8)	(9)	(10)	(11)	
Cuddalore South Division—cont.			RS.P.			
1 Pichavaram	Block VII	12·14 (30·0 acres)	173·00	152·00	2,100 00	....
2 Alwarmalai			(Sale dropped)	-		
3 Tagarai	Block XIII	42·09 (109·0 acres).	81·51	(Not available.)	3,432·00	....
4 Edaikal	Closed for ten years in south Arcot Collector's D. Dis. 45251/51, dated 12th November 1952 and District Forest Officer's Nos. 883/52 and 2602/51-L.					....
5 Manakollai (in Semakottai Reserved Forest).			No demand.			
6 Kotteri (in Semakottai Reservcd Forest) ..			Do.			
7 Karmangudi			Do.			..
8 Kttumailur			Sale dropped.			
9 Vellangulam			No demand.			
10 Parur		Not prescoibed under the working plans.				..
11 Kuppanatham			Nil.			....
12 Pandur			Nil.			....
13 Siruppakkam			Nil.			....
14 Kuthakudi			Sale dropped.			
14A Rangappanur	VII	50·18 (124·0 acres).	12·35	Not available.	620·00	....

APPENDIX VIII—*cont.*

(*Vide Section* 5)—cont.

B. OUTTURN AND PRICES OBTAINED FROM FUEL COUPES—*cont.*

1956–57.

Serial number and name of the series.	*Fuel Coupe number.* (12)	*Area in hectares.* (13)	*Price per hectare.* (14)	*Total yield obtained in tonnes.* (15)	*Total amount in rupees.* (16)	*Remarks.*
Cuddalore South Division—cont.						
1 Pichavaram	VIII	11·33 (28·0 acres)	509·03	556·00	5,768·00	....
2 Alwarmalai	IV	28·73 (71·0 acres).	29·65	20·00	852·00	....
	V	19·42 (48·0 acres).	29·65	192·00	576·00	....
3 Tagarai	XIV	39·25 (48·0 acres)	101·27	Not available.	3,977·00	....
4 Edaikal	Block I *	667·73 (1,650·00 acres)	4·86	261·00	3,250·00	Special coupes for Neyveli Rehabilitation programme
	Block II *	604·20 (1,750·0 acres)	7·10	1,009·00	5,000·00	....
5 Manakollai (in Semakottai Reserved Forest).			Sale dropped.			
6 Kotteri (in Semakottai Reserved Forest) ..			Do.			
7 Karmangudi	Block I		Do.			
	Block II	178·87 (442·0 acres)	6·75	151·00	1,210 00	....
		266·28 (658·0 acres).	9·78	406·00	2,602 00	....
8 Kattumailur			Sale dropped.			
9 Vellangulam			Do.			
10 Parur	Black I	335·88 (830·0 acres)	5·35	151·00	1,800 00	....
	Block II	428·97 (1,060·0 acres)	1·23	188·00	530·00	....
	Block III	566·56 (1,400·00 acres)	1·25	101·00	710·00	....
11 Kuppanatham	Nil	91·86 (227·0 acres)	0·70	No removal.	65·00	....
12 Pandur	Nil	384·86 (951·0 acres).	2·59	58·00	1,000·00	....
13 Siruppakkam	Nil.	437·05 (1,080·0 acres)	10·29	78·00	4,500·00	Special coupes for Neyveli Rehabilitation Programme.
14 Kuthakudi	Block I *	335·89 (830·0 acres).	10·42	424·00	3,500·00	
	Block II *	188·17 (465·0 acres)	11·20	219·00	2,100 00	Do.
14A Bangappanur	VIII	38·85 (96·0 acres).	54·34	Not available.	2,112·00	

* Special Coopes for Neyveli Rehabilitation Programme.

Serial number and name of the series.	Fuel coupe number. (1957–58)	Area in heactares.	Price per heactares.	Total yeild obtained in tonnes.	Total amount in rupees.	Remarks.
	(17)	(18)	(19)	(20)	(21)	
Cuddalore South Division.						
1 Pichavaram	Block IX	11·83 (28·0 acres)	494·00	658·00	5,600·00	....
2 Alwarmalai	Block VI	23·07 (57·0 acres)	32·12	333·00	741·00	....
3 Tagarai	Block XV	19·83 (49·0 acres)	81·51	Net available.	1,617·00	....
4 Edaikkal	Closed for ten years). Handed over to Neyveli Lignite Corporation.					....
5 Manakollai series (in Samakottai Reserved Forest).	Block IV		Sale dropped.			....
6 Kotteri (in Samakottai Reserved Forest) ..	Block IV to VI		Do.			....
7 Karmangudi		Handed over to Neyveli Lignite Corporation.				....
8 Kattumailur	Block IV to VI		Sale dropped.			....
9 Velangulam	Do.		Do.			....
10 Parur		Handed over to Neyveli Lignite Corporation.				....
11 Kuppanatham			Do.			....
12 Pandur			Do.			....
13 Siruppakkam			Do.			....
14 Kuthakudi			Do.			....
14A Rangappanur	Block IX	42·69 (105·0 acres).	54·34	Not available.	2,310·00	....

APPENDIX VIII—*cont.*

(*Vide Section* 5)—cont.

B. OUTTURN AND PRICES OBTAINED FROM FUEL COUPES.—*cont.*

Serial number and name of the series.	1958–59. *Fuel Coupe number.*	*Area in hectares.*	*Price per hectares*	*Total. yield obtained in tonnes.*	*Total amount in rupees.*	*Remarks.*
	(22)	(23)	(24)	(25)	(26)	
Cuddalore Shout Divisiou—cont.						
1 Pichavaram	Block X	11·74 (29·0 acres)	543·00	1,262·0	6,380·0	....
2 Alwarmalai	Block VII	20·64 (51·0 acres)	121·00	285·0	2,499·0	....
3 Tagarai	Block XVI	33·18 (82·0 acres).	121·00	Not available.	4,018·00	....
4. Edaikkal	Closed for ten years and Handed over to Neyveli Liginite Corporation.					
5 Manakollai series (in Semakottai Reserved Forest).	Block IV to VII		Sale dropped.			....
6 Kotteri (in Semakottai Reserved Forest) ..	Block IV to VII		Do.			....
7 Karmangudi		Handed over to Neyveli Lignite Corporation.				....
8 Kattumailur	Block IV to VII		Sale dropped.			....
9 Velangulam	Do.		Do.			....
10 Parur		Handed over to Neyveli Lignite Corporation.				....
11 Kuppanatham			Do.			....
12 Pandur			Do.			....
13 Siruppakkam			Do.			....
14 Kuthakudi			Do.			....
14A Rangappanur			....			....

Serial number and name of the series.	1959–60					Remarks.
	Fuel Coupe number.	Area in hectres.	Price per hectre.	Total yieldobtained in tonnes.	Total Amount in in Rupees.	
	(27)	(28)	(29)	(30)	(31)	
Cuddalore South Division—cont.						
1 Pichavaram	Block XI	8·90 (22·0 acres).	127·0	164·0	1,130·0	....
2 Alwarmalai	Block XVIII	20·23 (50·0 acres).	101·31	172·0	2,050·0	....
3 Tagarai	Block XVII	38·04 (94·0 acres).	91·42	Not available.	3,478·0	....
4 Edaikkal	Closed for ten years and handed over to Neyveli Lignite Corporation					....
5 Manakollai series (in Semakottai Reserved Forest).			Nil.			....
6 Kotteri (in Semakottai Reserved Forest)			Nil.			....
7 Karmangudi	Handed over to Neyveli Lignite Corporation.					....
8 Kattumailur			Do.			....
9 Velangulam			Do.			....
10 Parur			Do.			....
11 Kuppanatham			Do.			....
12 Pandur			Do.			....
13 Siruppakkam			Do.			....
14 Kuthakudi			Do.			....
14A Rangappanur			Do.			....

APPENDIX VIII—*cont.*

(*Vide Section* 5)—cont.

B. OUTTURN AND PRICES OBTAINED FROM FUEL COUPES—cont.

1960–61

Serial number and name of series.	*Fuel coupe number,*	*Area in hectares.*	*price per hectare.*	*Total yield obtained in ltonnes.*	*Total amount in rupees.*	*Remarks*
	(32)	(33)	(34)	(35)	(36)	
Cuddalore South Division.						
1 Pichavaram	Block XII	10·52 (26·0 acres).	321·00	164.00	3,380·00	....
2 Alwarmalai	Block IX	10·02 (47·0 acres).	49·42	82·00	940·00	....
3 Tagarai	Block XVIII	..	(Sale dropped.)			....
4 Edaikkal						
5 Manakollai series (in Semakottai R.F.) ..			....			
6 Kotteri (in Semakottai R.F.)			....			
7 Karmangudi			....			
8 Kattumailur			....			
9 Velangulam			....			
10 Parur			....			
11 Kuppanatham			....			
12 Pandur			....			
13 Siruppakkam			....			
14 Kuthakudi			....			
14A Rangappanur			....			

Serial number and name of the series.	Fuel coupe number.	1961-62. Area in hectres.	Price per hectre.	Total yield obtained in tonnes.	Total Amount in Rupees.	Remakrs
	(37)	(38)	(39)	(40)	(41)	....
Cuddalore South Division—cont.	Block					
1 Pichavaram	XIII	12·95 (32·0 acres)	Sale dropped in Conservator's L. Dis. 5823/61 A, dated 18th June 1961.			....
2 Alwarmalai	X	20·23 (50·0 acres).	103·75	163·00	2,100·00	....
3 Tagarai	XVIII	40·47 (100·0 acres)	42·0	89·00	1,700·00	....
4 Edaikkal	XIX	32·78 (81·0 acres).	51·90	Not available.	1,701·00	....
5 Manakollai series (in Semakottai Reserved Forest).			Sale dropped.			....
6 Kotteri (in Semakottai Reserved Forest) ..			Do.			....
7 Karmangudi		Handed over to Neyveli Lignite Corporation.				....
8 Kattumailur			Sale dropped.			
9 Velangulam			Do.			
10 Parur		Handed over to Neyveli Lignite Corporation.				....
11 Kuppanatham				Do.		....
12 Pandur				Do.		....
13 Siruppakkam				Do.		....
14 Kuthakudi				Do.		....
14A Rangappanur				....		....

APPENDIX—VIII—*cont.*

(*Vide Section 5*)—cont.

B. Outturn and Prices Obtained from Fuel Corps—*cont.*

Serial number and name of the series.	1962–63. Fuel coupe number.	Area in hectares.	Price per hectare.	Total yield obtained in tonnes.	Total amount in rupees.	Remarks.
	(42)	(43)	(44)	(45)	(46)	
Cuddalore South Division—cont.						
1 Pichavaram	Block XV	11·33 (28·0 acres).	247·0	231·0	2,800·00	....
2 Alwarmalai	XI	19·02 (47·0 acres).	150·7	142·0	2,867·00	....
3 Tagarai	XX	34·40 (85·0 acres).	61·7	71·0	2,125·00	....
4 Edaikkal	....					
5 Manakollai series (in Semakottai Reserved Forest).	....					....
6 Kotteri (in Semakottai Reserve Forest) ..	....					....
7 Karmangudi	Handed over to Neyveli Lignite Corporation.					....
8 Kattumailur	....					....
9 Velangulam	....					....
10 Parur	Handed over to Neyveli Lignite Corporation.					....
11 Kuppanatham	Do.					....
12 Pandur	Do.					....
13 Siruppakkam	Do.					....
14 Kuthakudi	Do.					....
14A Rangappanur	....					....

1963–64.

Serial number and name of the series.	Fuel coupe number.	Area in hectares.	Price per hectare.	Total yield obtained in tonnes.	Total amount in rupees.	Remarks.
	(47)	(48)	(49)	(53)	(51)	(54)
Cuddolore South Division—*cont.*						
1 Pichavaram	Block XVI	11·74 (29·0 acres).	185·30	159·0	2,175·00	....
2 Alwarmalai	XII	19·43 (48·0 acres).		Sale dropped.		....
3 Tagarai			....			....
4 Edaikkal			....			....
5 Manakollai series (in Semakottai Reserved Forest).			....			....
6 Kotteri (in Semakottai Reserved Forest) ..			....			....
7 Karmangudi			....			....
8 Kattumailur			....			....
9 Velangulam			....			....
10 Parur			....			....
11. Kuppanatham			....			....
12 Pandur			....			....
13 Siruppakkam			....			....
14 Kuthakudi			....			....
14A Rangappanur			....			....

N. B.—(1) One cart load = 0·5 tonne. (2) One head load = 45 Kg. (3) One ton = 1·016 Metric tonnes (4) One Hectane2·471 acres

APPENDIX VIII.

C. OUTTURN AND PRICES OBTAINED FROM CASUARINA AREAS.

Seria [number and name.	Year of planting.	Area in hectares and in acres.	Rate per ha.	Quantity removed in tonnes.	Total amount.
(1)	(2)	(3)	(4)	(5)	(6)
			RS. P.		RS. P.
1 Ariyakoshti	1946	33·18 (82· 0 acres).	512 00	124·00	17,000 00
2 Portonovo	1945	26·18 (65·0 acres).	164 25	120·00	4,325 00
3 Do.	1946	12·14 (30·0 acres).	91 46	120·00	1,111 00
4 Thiruthuraiyyur	1945	48·16 (119·0 acres).	62 68	N. A.	3,020 00
5 Do.	1946	44·52 (110·00 acres).	73 18	131·00	3,260 00
1 Iruvelpattu	1945	29·54 (73·0 acres).	20 25	100·00	600 00
2 Do.	1946	31·97 (79·0 acres).	Nil.	11·00	N. A.
		1956–57—*Nil.*			
		1957–58—*Nil.*			
		1958–59			
1 Ariyakoshti	1955	33·18 (82·0 acres).	58 73	41·00	1,950 00
2 Killai	1950	12·95 (32·0 acres).	499 78	100·00	6,475 00

Detailed figures—

Bit.	*Acres.*	*Amount.* RS. P.
I	7	1,000 00
II	3	500 00
III	6	1,600 00
IV	2	415 00
V	2	700 00
VI	5	1,735 00
VII	7	525 00
	32	6,475 00

1959-60—*Nil.*

			1960-61.				
VII 1	Killai (Pruning of casuarina plantation)		25·90 (64·0 acres).	40·93	50·80	1,320	00
2	Porto Novo (Pruning of casuarina plantation)	1966	17·00 (42·0 acres).	45·57	50·80	755	00
3	Pichavaram (Pruning)	1957	13·35 (33·0 acres).	24·70	25·40	330	00
VIII			*Nil.*				
			1961-62—				
IX		1962-63					
1	Ariyakoshti		33·18 (82·0 acres).	1,650·99	795·57	54,811	00

	Area ACRES.	*Amount*	*Tonnes.*
Bit I	9	6,825	103
Bit II	8	8,010	67
Bit III	14	8,010	143
Bit IV	10	5,000	101
Bit V	12	8,460	120
Bit VI	10	6,701	85
Bit VII	10	9,205	60
Bit VIII	9	6,600	104
	82	54,811	783

2	Killai (Pruning)	1959	20·23 (50·0 acres).	17·29	22·00	350	00
			1963-64.				
X 1.	Porto Fovo	1956	13·35 (33·0 acres).	1160·13	307·36	15,500	00

N. B.—Firewood one cart load—0·5 tonne   Twigs one cart load—0·25 tonne.   one tonne—1·016 metric tonnes.

N.A.—Not available.

APPENDIX VIII.

D. Minor forest produce Collected and Revenue realised.

Year. (1)	*Kind of produce.* (2)	*Unit of lease.* (3)	*Yield.* (4)	*Amount.* (5) RS.	*Total for the year.* (6) No.
1954	1. Avaram bark	Alwarmalai, Kuthakudi, Sirupakkam, Pandur, Seedevi, Nathanur and Kuthakudi.	No removals	130·00	152·00
	2. Tamarind	Parur	Do.	22·00	
1955	Tamarind	Parur	262 Kg.	22·00	22·00
1956	Do.	Varanjaram	Not available	25·00	45·00
	Do.	Magarur	Do.	20·00	
1957	Avaram bark	In Ulundurpet, Villupuram and Tirukoilur ranges.	1,663 Kg.	130·00	206·00
	Tamarind	Varanjaram	43 Kg.	29·00	
	Do.	Magarur	Not available	47·00	
1958	Tamarind	Porasakurichy	Do.	12·00	45·00
	Neem	Varanjaram	84 Kg.	33·00	
1959	Avaram bark	Ulundurpet, Vridhachalam and Panruti ranges.	Not available	70·00	70·00
1960	Do.	Do.	Do.	75·00	159·00
	Tamarind	Varanjaram	Do.	37·00	
	Do.	Porasakurichy	Do.	17·00	
	Do.	Magarur	Do.	30·00	
1961	Broom stick	Ammeri	636 H.L.	65'00	80·00
	Palm leaves	Killai	5 C.L.	15·00	
1962	Tamarind	Varanjaram	96 Kg.	50·00	125·00
	Broom stick	Ammeri	15 H.L.	75·00	
1963	Tamarind	Varanjaram	260 Kg.	72·00	149·00
	Do.	Kattumailur	378 Kg.	77·00	

C.L. = Cart load H.L. = Head load.

APPENDIX VIII.

E. Grazing.

Year.		*Buffaloes.*	*Amount.*	*Bulls and Cows.*	*Amount.*	*Sheep.*	*Amount.*	*Total amount.*
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)
			RS. P.		RS. P.		RS. P.	RS. P.
1959–60	..	528	264 00	14,789	3,697 25	29,285	3,514 20	7,475 45
1960–61	..	614	307 00	15,998	3,999 50	29,676	3,561 12	7,867 62
1961–62	..	632	316 00	15,629	3,907 25	26,258	3,150 96	7,374 21
1962–63	..	680	340 00	19,851	4,962 75	32,945	3,953 40	9,256 15
1963–64	..	609	304 50	19,277	4,819 25	38,125	4,575 00	9,698 75
Total	..	3,063	1,531 50	95,544	21,386 00	1,56,289	18,754 68	41,672 18

APPENDIX IX (*Vide* Paragraph   ).

Pests and Diseases of Cashew and their control pests.

Major Pests.

(1) *Mango Hopper, (Indiocerus sp.)* :—It is a small wedge-shapped insect about 3 millimetre in length. The minute eggs are laid on the shoots and leaves. The young hopper resembles the adult but is smaller in size and wingless. The nymph casts its skin periodically and grows into an adult within 10 days.

Both adults and nymphs swarm on the tender portions of the tree and suck up the plant sap by means of their tubular mouth, thus causing a substantial drain in the plant nutrition.

The breeding season corresponds with the mango blossom.

(2) *The cashew borer (Plocaerus ferrugineus L.*—family :—Cerambycidae) :—The medium sized dark brown longicorn bettle is one of the most serious pests of cashew. The antennae are twice the length of the body in the male and not longer than the body in the female. When caught, the beetle makes an indignant squeaking sound.

Eggs are laid under loose bark at the basic of the trunk and exposed protions of roots. The white grubs that hatch out bore into the bark and feed on the soft tissues. Some bore into the wood also. A full grown grub is stout, fleshy, soft, dull, white in colour and is about 7.5 centimetre long. The body tapers slightly from head to tail. The jaws are powerful to burrow into the wood. Pupation is below the soil at a depth of 10–15 centimetre in a calcareous shell, half embedded in an excavation made in the wood. The exact life history of the beetle is not known, but it extends over some months. Grubs of different stages of development are met with at any part of the year and so several generations may be overlapping.

The grubs feed on the sub epidermal and phloem cells and tissues are tunnelled in various irregular directions. Gummosis sets in. A thick mass of chewed fibre and excreta is thrown behind in the tunnels. The tree is weakened as a result of the arrest of flow of sap; the leaves turn yellow before the tree dies. Such trees can be easily located in a plantation from a distance. The attack is seen mostly in trees over 8 years old.

Control.—The cashew borer is a difficult pest to control. (1) Mechanical removal of eggs grubs and pupae, (2) giving a drenching spraying on the basal trunk and at the root region with BHC 0.1 per cent, (3) syringing the bore holes with chemicals and cutting and removing the badly affected trees.

(3) *The leaf miner (Acrocercops syngramma M) family.*—This is a major pest appearing during the occurrence of new flush. This is a caterpillar of a tiny silvery month. The caterpillar is small and pale white and it mines into the tender leaves; The larval stage lasts over nearly tow weeks. It falls on the ground and pupates. The pupal stage lasts from 7 to 9 days.

The injury consists of tortuous markings made on the fresh leaves. The thin epidermal peel swells up in the mined areas due to merger of several mined portions and appears as whitish blistered patches which, when the leaf grows, form big holes. Young plants generally suffer most. As many as 8 caterpillars have been noted on a single leaf.

Control.—As the pest is internal, it is difficult to control. Spraying Parathion 0.025% synchronising with the formation of new flush may be resorted to.

(4) *The leaf eating caterpillar (Circula trifenestrata H. family. Saturnidae).*—Though a sporadic pest it sometimes causes extensive defoliation. The caterpillar when full grown is stout, dark brown, about 5 centimetre long, clothed with poisonous spines and has sharply defined segments with a reddish white stripe along the side. It pupates inside a loose golden silk cocoon spun amongest leaves and twigs. The adult is a reddish brown moth with three clear spots on the wings.

The alternative hosts are mango, *Terminalia, Careya arborea* and other trees. The caterpillar of *Phycita dentilin clla* A. parasitises this at the pupal stage.

Parathion 0.025 per cent is efficient against such hairy caterpillars. Young stages are susceptible to BHC 10 per cent dust or BHC 0.1 spray.

(5) *Caterpillar damaging shoot tip (Chelaria haligramma M family).*—The caterpillar damges fresh shoot tips during the time of new flush. It is tiny, yellowish or greenish brown. 12 mm long when full grown and moves about briskly. The pupa is yellowish red and pupates inside the folded leaves or small bore holes made on shoot tips or floral branches. The pupation period is 7–8 days. The adult is a tiny dark moth.

Tender leaves are damaged mostly at the bud stage and tender shoot tips are occassionally bored to a length of about 25 m.m. The growing shoot tip becomes stunted and sometimes gels scorched up.

Mango is an alternative host.

(6) *The tea mosquito (Helopeltis antoni S. family Capsidae).*—It is one of the most serious pests. The bug is reddish brown, active and has a peculiar knobbed process projecting from the dorsal side of the thorax. The nymphs are soft and ant-like and move about slowly on the tender twigs and leaves.

The adults and nymphs suck up the sap by puncturing the tender plant parts such as shoots, leaves, floral branches, thalamus, apple and nuts. The punctured shoots turn dark and dry up to a short length. Generally, fresh shoots sprout from below the dried up portion, but such sprouts are also attacked in turn. When the damage is severe, it results in the drying of young branches and even the death of the plant if young. When the floral branches are punctured, the flowers fall. The nuts and apples fall after the attack. The bug is suspected to infest a virus.

The alternative hosts are tea, mahogany, neem, coco, cinchona, annato, guava, apple and grape wine. It is found more on the west coast than on the east.

(7) *The leaf thrips* (*Solenothrips rubrocinctus G., Rhipiphorothrips cruentatus H. family Retiontips syllabus M*).—The first two are the more serious and common. The nymphs of Solenothrips are greenish yellow with a red band across the first and last abdommal segments.

Damage is severe on young plants though older trees are not spared sometimes. Due to the sucking and lacerating activity of these, the leaves become pale brown and slightly crinkled. The plants become stunted. The trees is shady areas suffer more. They are observed in a pest form during the hot months and the attack subsides with the onset of monsoon. Solenothrips is occasionally seen on *Terminalia catappa*.

Control.—BHC 0.05 per cent or Parthian 0.025 per cent (1 cc. of Folidal in 21 or 1 cc. of Ekatex 20 in 800 cc.) spray.

Minor Pests.

(1) *Leaf webber* (*Macalla sp.*).—This is the caterpillar of a medium sized dark brown moth and it feeds on the fresh shoots after webbing together the apical leaves. Young plants are damaged during summer. It is often parasitised by a braconid.

(2) *The bark borer* (*Indarbela tetraonis Mo*).—The caterpillar makes a residential hole on the wood and from there makes inroads through the bark forming galleries. The damage is not serious.

(3) *Defoliating caterpillar* (*Metanastria hyrtaca C*) *family*: *Lasiocampidae*): The caterpillar is about 6 cm. long and hairy. It defoliates the branches and during day time a group of them rest on the base of the trunk. It is also seen or *Acacia arabica* and *Nyctanthes arbor-tists*.

(4) *The slug caterpillar* (*Parasa lepida Cr.* (*family*: *Limacodidae*).—It scrapes and eats the green leafy matter leaving behind the veins. It is bright green and armed with poisonous spines. It pupates on the stem, the pupal case being covered with poisonous hairs. The life cycle lasts for about 10 weeks.

The alternative hosts are caster, mango, pomegranate, citrus, cluster beans, rose, etc.

(5) *The looper* (*Oenospila flavi uscata W.* (*family* : *Geometridae*).—It is about 2.5 c.m. long and is greenish when full grown. It feeds on tender leaves especially margins.

(6) The mealy bug, *Planococcus lilacinus* C. family Coccidae) occurs on tender shoots.

(7) The wax scale, *Ceroplastes floridensis* C. (family : Coccidae) infests leaves. The lady bird beetle, *Chilocorus nigritus* F. has been seen preying on this scale.

(8) The giant scale *Monophebus* sp. (family : Coccidae) occurs in stray numbers on tender shoots

(9) The beetle *Monolepta longitarsus* J. (family Chrysomelidae) appears in numbers and feeds on tender leaves and stem during the monsoon months of June to August in West Coast.

(10) The leaf twisting weevil of mango, *Apoderus tranquebaricus* F. occurs at the time of new flush. The beetle folds the leaf along the midrib, deposits eggs on the leaf tip and twists the leaf into a compact roll. The yellow grubs feed on the rolled up leaf tissues. The damage is light.

(11) *Mylloceyus discolor* B.
(12) *M. Viridanus F.*
(13) *Amblyrhinus poricollis B.*
} Polyphagous weevils often seen feeding on fresh leaves of young plants.

(14) *Prionoma atratus G.* } Ceramibycid borers found occasionally.
(15) *Plocaedrus consocius P.*

(16) *Sylepta aurentiacallis* F. a leaf roller. } occasional.
(17) *Argytoploce tonsoria* M. (Eucosmidae) Caterpillar
(18) *Antheraea paphia* B. the Tasser Silk moth

(19) The red ant, *Oecophylla smaragdina* F. is a common source of nuisance to cashew growers. Besides nursing the aphids, scales and mealy bugs, this ant aids the spread of these insects from plant to plant.

(20) The ant *Camponotus* sp. bites tender leaves of young plants. Block sports are formed in course of time at the injured region and the leaves put on a diseased appearance.

(21) The flower thrip, *Rhyncothrips raoensis G.* occurs on the inflorsescence and tender leaves. It causes scabs on the floral branches, apples and nuts. The scabbed areas appear as brown patches due to the formation of corky layers. Stray cases of heavy occurrence on isolated trees causing malformation of nuts have been reported. It attacks tender shoots also.

(22) An unidentified yellow thrip is commonly seen during the flowering season. The injury caused is the same as the previous insect.

(23) The mealy bug *Ferrisiana virgata* C. infests the inflorescene. Isolated cases of heavy occurrence were reported. Heavy populations cause the shedding of flowers and drying up of the inflorescence.

(24) A soft scale *Coccus* sp. occasionally feeds on tender shoots and nuts.

(25) The aphid, *Toxoptera odinae* vdg. occurs on the inflorescence, branches and tender shoots. Heavy infestation can cause flower shedding to some extent. This is occasionally a pest on mango inflorescence.

(26) The apple borer, *Nephopteryx* sp. bores into tender apples and sometimes into the tender nuts also.

(27) The caterpillar of a Tortricid moth feeds on tender nuts. It webs together dried up flowers and shelters inside.

(28) A small pinkish caterpillar of an unidentified tiny brown moth bores into the ripe apple at the joint between the apple and the nut.

(29) The hairy caterpillar, *Euproctis scintillans* W (famil : Lymentridae) feeds in groups on the inflorescence and tender nuts. Occasionally they eat the leaves also. It occurs on mango and other plants.

(30) The red grain beetle—*Triboleum castaneum M.* } **Damage cashew kernels in storeage.**
(31) The saw toothed beetle—*Oryzaephilus surinamen sis L.*
(32) The red legged ham bestle—*Nacrobia rufipes F.*
(33) The cadelle beetle—*Tenebroides mauritanicus L*
(34) The Fig moth—*Ephestia cantella W.*
(35) The Indian meal moth *Plodia interpunctata H.*

(22) An unidentified yellow trip is commonly seen during the flowering season.

Diseases of cashewnut.

(1) *Die-back or pink disease Pellicularia salmonicolor.*—This disease has been observed in Tanjore and Tiruchirappalli districts. The younger trees of 2 to 3 years old are more susceptible to the attack. The disease is characterised by the yellowing of leaves which fall off later on presenting a 'stag head' appearance. The dried portion of the stem is covered by a pinkish coating which encircles the shoot causing the death of the branch. The progress and spread of the dease depends upon the atmospheric moisture prevailing at the time.

Control.—The diseased branches should be removed by cutting back until the healthy portion is reached. The cut ends should be covered with Bordeaux paste.

2. *Shoot and inflorescence drying: Glocosporium mangiferae.*—This disease is noticed in all cashew growing areas. The injuries caused by the tea mosquito (Heliopeltis) appear to be the initial cause of the disease. *Glocosporium mangiferae* affects the wounded portions and irregular brown water soaked spots are produced on the tender shoots, inflorescence and leaves. Many spots coalesce together resulting in the drying up of the affected portions.

Control.—Spraying 1 per cent Bordeaux mixture after controlling the insects will control the disease.

(3) Apple rot and nut spotting: *Clocosporium mangiferae* and *Macrophoma sp.*

Circular depressed and brown spots are caused by *Glocosporium mangiferae* while *Macrophoma sp.* produces irregular brown water soaked spots. Both the fungi infect the tender nuts producing brown spots. The affected nuts become black in colour.

Control.—Spraying with Bordeaux mixture (1 per cent) or other copper fungicide before the apple ripens or the nuts mature, will control the disease.

(4) *Seedling blight Fusarium sp.*—The symptoms of the disease are yellowing of young leaves which lose their turgidity and wilting of the whole plant subsequently. Rooting of the collar region of the infected plant is seen and the roots become fibrous.

Control.—Drenching the soil with 0.1 per cent wet ceresan or 1 per cent Bordeaux mixture, when the first symptoms of wilting is seen, will check the spread of the disease. A second drenching may be beneficial in cases of severe attack of the disease.

Leaf spot diseases.

(5) *Grey blight: Pestalotia dicheata.*—This disease occurs in severe forms in the drier months of the year. The leaves which are directly facing the sun's rays are more susceptibe than the rest. The spots caused by the disease appear on both surfaces of the leaves and start either from the margin or from the centre. The affected portions show drying.

(6) *Brown leaf spot: Colletotrichum glocosporoides.*—The spots are brown with deeper coloured margin. They may be circular or irregular. The frucitifications of the fungus are greyish in colour.

(7) *Grey spot: Mycospherella sp.*—Irregular brown spots with grey centre are formed on both surfaces of the leaves. The fructifications appear as small raised dot like bodies which consist of many perithecia. These spots cause drying up of infected portions.

(8) *Red leaf spot: Phyllosticta sp.*—The spots are circular and brick-red in colour. Shot holes are formed when the affected portions fall off. The pycnidia are seen as dark brown slightly raised bodies. Badly affected leaves are crinkled and dry up.

(9) *Leaf spot: Labridium sp.*—The spots are light brown with grey centre on the upper surface. The pycnidia are produced on the upper surfaces.

(10) *Aed rust. Cephaleuros mycoidea.*—This is an elgal parasite causing an infection upto 25 per cent of cashew plants. The disease is characterised by the circular orange yellow algal growth on the leaves. Many spots coalesce together resulting in the disccloration of the tissues.

Control.—A general spraying of 1 per cent Bordeaux mixture or other copper fungicides will control all the above mentioned leaf spot diseases. When the trees put up new growth of shoots, the spraying should be taken up. A second spraying after 3 to 4 weeks may be effective if the disease is severe.

11. *Decline of cashew : Pythium spinosum.*—This disease is characterised by progressive defoliation and drying of the twigs during summer months. The infected trees die within 2 or 3 years. The roots are dark brown and fibrous. The infection seems to take place in the rainy season.

Control.—Drenching the soil with cheshnut compound (1 oz. to 2 gallon water) gives good control of the disease. Application of compost ammonium sulphate and super phosphate after drenching induces the trees to grow vigorously.

12. *Powdery mildew : Oidium anacardil.*—This disease occurs during the dry weather and infects the tender leaves and inflorescences. The white powdery growth of the fungus is seen on the affected portions.

Control.—Dusting with fine sulphur controls the disease.

Phanerogamic parasites : (i) *Loranthus.*—The parasite is seen as a bushy dark green growth on the branches of cashew. The parasite sends haustoria into the host plant to absorb nutrients and the affected branches have very few leaves showing the symption of die back

(2) *Cuscuta.*—This parasite has greenish thread like stom which encircles the twigs. Haustoria serve as the organ of attachment and absorption of food materials from the host plant. This parasite affects the general growth and yield.

Control.—Since the Phanerogamic parasites are noticed only in the neglected gardens, field sanitation will prevent the occurrence of such parasites. They should be cut and removed when they are noted.

APPENDIX X—SAMPLE TIDE TABLES.

TIDE TABLE FOR THE MONTH OF OCTOBER 1964.

Date and day.	Time of High	Height.	Time of Low	Height	Date and day.	Time of High	Height	Time of Low.	Height
(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
1st October 1964, Thursday ..	0523	0·6	1202	0·2	17th October 1964, Saturday ..	0600	0·7	2335	0·3
	1800	0·5				1842	0·7	1235	0·3
2nd October 1964, Friday ..	0622	0·7	2350	0·2	18th October 1964, Sunday ..	0638	0·7	0026	0·3
	1854	0·6	1254	0·2		1916	0·7	1306	0·3
3rd October 1964, Saturday ..	0709	0·7	0047	0·2	19th October 1964, Monday ..	0712	0·8	0108	0·3
	1839	0·7	1334	0·1		1948	0·8	1334	0·3
4th October 1964, Sunday ..	0749	0·8	0133	0·2	20th October 1964, Tuesday ..	0744	0·8	0146	0·3
	2017	0·7	1409	0·1		3021	0·9	1403	0·2
5th October 1964, Monday ..	0823	0·8	0213	0·2	21st October 1964, Wednesday	0817	0·8	0224	0·3
	2053	0·8	1441	0·1		2055	0·9	1426	0·2
6th October 1964, Tuesday ..	0855	0·8	0250	0·2	22nd October 1964, Thursday ..	0852	0·8	0302	0·3
	2125	0·8	1508	0·1		2131	0·9	1502	0·2
7th October 1964, Wednesday ..	0924	0·7	0324	0·2	23rd October 1964, Friday ..	0929	0·8	0342	0·3
	2155	0·8	1532	0·2		2111	0·9	1536	0·2
8th October 1964, Thursday ..	0952	0·7	0356	0·2	24th October 1964, Saturday ..	1010	0·8	0424	0·3
	2224	0·8	1553	0·2		2255	0·9	1612	0·2
9th October 1964, Friday ..	1019	0·6	0426	0·2	25th October 1964, Sunday ..	1055	0·7	0511	0·3
	2253	0·7	1610	0·2		2345	0·8	1654	0·3
10th October 1964, Saturday ..	1048	0·6	0457	0·2	26th October 1964, Monday ..	1151	0·6	0606	0·3
	2325	0·7	1632	0·2				1746	0·3
11th October 1964, Sunday ..	1121	0·5	0532	0·3	27th October 1964, Tuesday ..	0048	0·8	0718	0·3
			1703	0·2		1313	0·6	1857	0·3
12th October 1964, Monday ..	0004	0·6	0612	0·3	28th October 1964, Wednesday ..	0209	0·7	0855	0·3
	1202	0·5	1742	0·3		1508	0·6	2034	0·3
13th October 1964, Tuesday ..	0056	0·6	0711	0·3	29th October 1964, Thursday ..	0340	0·7	1037	0·3
	1306	0·5	1888	0·3		1650	0·6	2217	0·4
14th October 1964, Wednesday	0215	0·6	0901	0·4	30th October 1964, Friday ..	0458	0·7	1144	0·3
	1524	0·4	2016	0·4		1800	0·7		
15th October 1964, Thursday ..	0355	0·6	1109	0·4	31st October 1964, Saturday ..	0558	0·8	2336	0·4
	1706	0·6	2219	0·4		1849	0·8	1230	0·3
16th October 1964, Friday ..	0509	0·6	1200	0·3					
	1802	0·6							

APPENDIX X—SAMPLE TIDE TABLES,

TIDE TABLE FOR THE MONTH OF APRIL 1964.

Date and day. (1)	Time of High. (2)	Height. (3)	Time of Low. (4)	Height. (5)	Date and day. (1)	Time of High. (2)	Height. (3)	Time of Low (4)	Height. (5)
1st April 1964, Wednesday ..	1127 2314	0·5 0·4	0453 1715	0·1 0·01	16th April 1964, Thursday ..	1131 2317	0·5 0·4	4041 1731	0 0 0·1
2nd April 1964, Thursday ..	1200 2344	0·4 0·4	0516 1746	0·1 0·0	17th April 1964, Friday ..	1235 ..	0·5 ..	0551 1839	0·1 0·1
3rd April 1964, Friday ..	1237 ..	0·4 ..	0544 1821	0·1 0·0	18th April 1964, Saturday ..	0032 1335	0·4 0·5	0637 1943	0·0 0·1
4th April 1964, Saturday ..	0017 1322	0·3 0·4	0617 1904	0·0 0·1	19th April 1964, Sunday ..	0139 1447	0·3 0·5	0733 2110	0·0 0·1
5th April 1964, Sunday ..	0058 1424	0·3 0·4	0658 2007	0·0 0·1	20th April 1964, Monday ..	0310 1606	0·3 0·4	0847 2255	0·1 0·1
6th April 1964, Monday ..	0201 1546	0·2 0·3	0754 2219	0·0 0·2	21st April 1964, Tuesday ..	0447 1720	0·3 0·5	1018 ..	0·1 ..
7th April 1964, Tuesday ..	0355 1708	0·2 0·4	0922 ..	0·1 ..	22nd April 1964, Wednesday ..	0606 1821	0·3 0·5	0012 1143	0·1 0·1
8th April 1964, Wednesday ..	0537 1810	0·3 0·4	0025 1111	0·1 0·1	23 d April 1964, Thursday ..	0704 1909	0·4 0·5	0104 1247	0·0 0·1
9th April 1964, Thursday ..	0602 1856	0·3 0·5	0109 1228	0·1 0·1	24th April 1964, Friday ..	0750 1949	0·5 0·5	0143 1337	0·0 0·1
10th April 1964, Friday ..	0730 1936	0·4 0·6	0143 1323	0·1 0·1	25th April 1964, Saturday	0828 2022	0·5 0·5	0214 1418	0 0 0·1
11th April 1964, Saturday ..	0812 2013	0·5 0·6	0214 1409	0·0 0·0	26th April 1964, Sunday ..	0900 2051	0·5 0·5	0243 1454	0·0 0·1
12th April 1964, Sunday ..	0851 2050	0·6 0·6	0246 1452	0·0 0·0	27th April 1964, Monday ..	0930 2117	0·6 0·5	0308 1524	0·0 0·1
13th April 1964, Monday ..	0931 2129	0·6 0·6	0319 1534	0·1 0·0	28th April 1964, Tuesday ..	0957 2143	0·6 0·5	0328 1625	0·0 0·1
14th April 1964, Tuesday ..	1012 2210	0·6 0·6	0354 1616	0·1 0·0	29th April 1964, Wednesday ..	1025 2211	0·6 0·5	0349 1625	0·0 0·1
15th April 1954, Wednesday.	1056 2252	0·6 0·5	0430 1700	0·1 0·0	30th April 1964, Thursday ..	1056 2242	0·5 0·4	0412 1656	0·0 0·1

APPENDIX XI

LIST OF CONTROL FORMS, JOURNALS AND LEDGERS.

1. *Control of felling and yield common to cdsuarina, Cashew and Eucalyptus working Circles.*

Name of the series :

Year.	*Locality.*	*Coupe number.*	*Area prescribed hectare.*	*Area done in hectare*	*Yield in tonnes and Kilogramme.*		*Revenue.*		*Remarks.*
					Total.	*Per hectare.*	*Total.*	*Per hectare.*	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

2. Control of Felling in Sandal Working Circle.

Name of the series—

Year.	*Locality.*	*Coupe number.*	*Areas. prescribed in hectare.*	*Area done in hectare.*	*Outturn of rough cleaned wood.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)

3. Record of Yield in Sandal Working Circle.

Name of the series :

Year.	*Locality.*	*Coupe Number.*	*Number of trees extracted in girth classes.*	*Outturn in tonnes.*		*Remarks.*
				Sapwood.	*Heartwood.*	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			(i) 15 cm.—30 cm. (ii) 30 cm.—45 cm. (iii) 45 cm—60 cm. etc.			

4. Control of regeneration operations common to cashew, Casuarina, Eucalyptus, Rehabilitation and Sandal working Circles.

Year.	*Locality.*	*Coupe Numb r.*	*Area prescribed in hectare.*	*Area done in hectare.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)

5. Control of cultural operations in cashew.

Year.	*Plantations prescribed.*	*Plantations done.*	*Area prescribed in hectare.*	*Area worked in hectare.*	*Remarks*
(1)	(2)	(3)	(4)	(5)	(6)

6. Record of works common to all regeneration operations in Cashew, Casuarina, Eucalyptus Sandal and Rehabilitation and Miscellaneous working circles

Working Circle.

Name of the Series.

Coupe No. and No. of plots.

Year.	*Kind of work prescribed.*	*Para of working Plan.*	*Area in hectare.*	*How done.*	*No. of man hours or Machine hours utilised.*	*Date of starting.*	*Date of finishing.*	*Cost in Rs.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

7. Control of Soil Conservation works in Soil Conservation Working Circle.

Year.	*Name of the working Circle in which prescribed.*	*Area prescribed in hectare.*	*Area done in hectare.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)

8. PLANTATION JOURNAL AND LEDGER COMMON TO CASHEW, EUCALYPTUS, REHABILITATION AND SANDAL WORKING CIRCLE.

(1) Sketch of the plantation in 8 inches to a mile or larger.

(2) Name of the Forest.

(3) Name of the Series.

(4) Coupe No. and Number of Sub-coupes or plots.

(5) Area of the coupe and individual areas of sub-coupes or plots in hectares.

(6) Description of the locality.

(i) Topography.

(ii) Soil-Colour, nature, depth, etc.

(iii) Original vegetation, species, density and height:

(7) Clear felling—

(i) how done—(*a*) departmentally, or by contractors,

(*b*) by manual labour or tractors.

(ii) dates from to

(iii) number of man hours or machine hours utilised,

(iv) amount of saleable wood obtained,

(v) price fetched.

(8) Uprooting—

(i) how done,
(ii) dates of beginning and finishing,
(iii) number of man hours or machine hours utilised,
(iv) amount of roots and stumps obtained,
(v) price fetched.

(9) Ploughing—

(i) how done,
(ii) number of bullock hours, man hours or machine hours utilised,
(iii) dates from to

(10) Aligning, staking and pitting.

(11) Planting with dates, number of plants planted on each date, the amount of fertilizers and insecticides added if any.

(12) Replacement of casualties.

(13) Soil working, etc.

(i) How done.
(ii) Number of man hours or machine hours utilised.
(iii) Dates when work was done.

(14) Miscellaneous works.

(15) Soil conservation works.

(16) Result of enumeration under dates.

(17) Rainfall statement from the nearest station with an abstract of number of rainy days and rainfall in millimetre for every month.

(18) General notes on the condition of the planting and instructions by the inspecting Officers.

(19) Plantation ledger showing monthly record of expenditure for the various items under which estimates are sanctioned.

9. PLANTATION JOURNAL FOR CASUARINA WORKING CIRCLE.

(1) Sketch of the plantation.

(2) Name of the forest and series.

(3) Coupe number and the number of plots.

(4) Area of the coupe and the plots.

(5) Description of the locality—
- (i) topography,
- (ii) soil-colour, nature and depth,
- (iii) depth of water table.

(6) Clear-felling—
- (i) date,
- (ii) Per hectare yield.

(7) Fencing—
- (i) material used,
- (ii) length,
- (iii) amount of materials used,
- (iv) man hours utilised.

(8) Ploughing—
- (i) how done,
- (ii) number of bullock or machine hours used.

(9) Aligning, staking and pitting.

(10) Planting with—
- (i) dates,
- (ii) number of man hours utilised.

(11) Number of wells or hand pumps installed—description.

(12) Watering dates with men hours employed and the area watered.

(13) Soil working and weeding (i) dates with men hours employed and the area watered.

(14) Replacement of casualties.

(15) Pruning, etc.

(16) Result of enumeration with dates.

(17) Rainfall statement with abstract of number of rainy days and the rainfall in millimetres for each month.

(18) General notes on the condition of the plantation and instructions by the Inspecting Officers.

(19) Miscellaneous.

10. NURSERY JOURNAL.

(1) Sketch of the nursery area.

(2) Permanent or temporary, area in hectares and locality.

(3) Number of wells, pump-sets, etc., installed wth details.

(4) Number of beds under each species.

10. NURSERY JOURNAL—*cont.*

(5) Preparation of beds, manuring, etc.

(6) Dates of sowing and quantity of seeds sown and the number of beds.

(7) Method of watering, number of man hours employed.

(8) Filling up of polythene bags with dates and number of man hours utilised.

(9) Pricking out-dates, number of bags, etc., number of man hours utilised.

(10) Watering of containers, frequency, number of man hours utilised.

(11) Shifting of containers–dates, number and man hours.

(12) Nature of fertilisers, insecticides applied with quantity and dates.

(13) Details of shading for Eucalyptus seedling.

(14) Dates of removal seedlings and the number removed.

(15) Pest attack, diseases if any and measures taken.

(16) Number of permanent mazdoors employed.

(17) Rainfall statement.

(18) Cost of production of 1,000 seedlings.

(19) Ledger showing monthly record of expenditure for the various items given above.

11. CONTROL JOURNAL (COMBINED FOR ALL WORKING CIRCLES.

(1) General—

(*a*) Cashew Working Circle. (*b*) Casuarina Working Circle. (*c*) Eucalyptus Working Circle. (*d*) Sandal Working Circle. (*e*) Rehabilitation Working Circle. (*f*) Minor Forest Produce Working Circle. (*g*) Grazing Working Circle. (*h*) Soil Conservation Working Circle.	Brief notes in a narrative form regarding the suitability of areas allotted to each Circle and work done during the year arrears.

(2) Regeneration—

(*a*) Seed—Collection, preservation, viability, cost, etc.

(*b*) Nursery—Changes in the technique, observations.

(*c*) Planting—Improvement to the existing technique.

(*d*) Preliminary works—Comments on the system of preparing the area one year ahead of planting. Possibilities of introducing cash crops—Results.

(*e*) Soil working—Improved techniques, use of machinery cost and times factor—Proper season.

(*f*) Kumri—Kinds of field crops grown, influence on the forest crop.

(3) Cashew sales—How the price is affected by the market trends, improvement to the crop, smaller units versus bigger units, etc.

(4) Market conditions—In respect of fuel, cashewnuts and fruits and Minor Forest Produce.

(5) Roads—Suggestions, cost, maintenance, etc.

(6) Buildings—Suggestions, cost, maintenance, etc.

(7) Boundaries—Maintenance, cost, checking and verification, etc.

11. CONTROL JOURNAL (COMBINED FOR ALL WORKING CIRCLES)—*cont.*

(8) Injuries to the crop—

(*a*) Fires.

(*b*) Offences.

(*c*) Insects.

(*d*) Disease.

(*e*) Climate.

(9) Rainfall and climate—How crops are affected.

(10) Machinery—Purchase and maintenance, use in various operations.

(11) Staff—Changes in the strength necessity to increase or decrease.

(12) Labour—Availability, wages, etc.

12. Deviation Statement.

Item number.	Year.	Reference to Working Plan paragraph.	Prescription.	Nature of Deviation.	Authority sanctioned.
(1)	(2)	(3)	(4)	(5)	(6)

13. Financial Statement.

Working Circle.	Revenue.			Expenditure.		
	Working Plan forecast.	Actuals.	Remarks.	Working Plan forecast.	Actuals.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)

APPENDIX XII.

Data on Soil Analysis of Important Forest Areas.

Serial number and locality.	*Sample from ground level in cm.*	*Soil recation.*		*Nutrient status.*		*Remarks.*
		PH.	*EC in mill mbos/cm.*	*N percent organic Carbon.*	*P. in lbs. acre.*	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 Kangiruppu Bit IRF. 1956 I.	0·15	5·7	0·1	98	6·5	..
	15·30	5·3	0·1	112	7·5	..
2 Do. 1957 I.	0·15	6·1	0·1	98	6·0	..
	15·30	5·2	0·1	294	4·5	..
3 Do. 1958 IV	0·15	5·7	0·1	98	6·0	..
	15·30					
4 Do. 1959 I	..	5·9	0·1	140	6·0	..
5 Do. 1960 V	0·15	6·3	0·1	140	7·0	..
	15·30	5·0	0·1	70	5·5	
6 Do. 1956 VI	..	5·4	0·1	140	15·5	..
7 Kangiruppu Bit II R.F. 1957 II.	0·15	6·0	0·1	98	9·0	..
	15·30	5·7	0·1	126	5·0	..
8 Kangiruppu Bit II R.F. 1958 VI.	0·15	6·1	0·1	140	8·0	..
	15·30	5·3	0·1	140	3·0	..
9 Kangiruppu Bit II R.F. 1959 VII.	0·15	5·7	0·1	126	9·0	..
	15·30	5·4	0·1	154	5·0	..
10 Kangiruppu Bit II R.F. 1959 I	..	6·0	0·1	56	2·5	..
11 Kangiruppu Bit II R.F. 1960 II.	0·15	6·0	0·1	168	7·5	..
	15·30	6·3	0·1	42	6·0	..
12 Samakottai R.F. Mathur 1960 V.	0·15	5·1	0·1	168	3·0	..
	15·30	5·4	0·1	140	6·0	..
13 Samakottai Mudanai 1959 IX.	0·15	5·7	0·1	154	4·5	..
	15·30	5·9	0·1	154	7·5	..
14 Samakottai north unplanted area.	..	5·0	0·1	140	15	..
15 Ammeri— R.F. 1956 II ..	0·15	5·5	0·1	28	6·0	..
	15·30	4·8	0·1	98	7·5	..
16 Narimanam R.F. 1957 VII.	0·15	5·5	0·1	112	6·0	..
	15·30	4·8	0·1	42	9·5	..
17 Narimanam R.F. 1958 VI.	0·15	6·1	0·1	126	5·0	..
	15·30	5·0	0·1	112	10·0	..
18 Narimanam 1961. III ..	0·15	6·1	0·1	168	12·5	..
	15·30	5·2	0·1	56	8·0	..
19 Volangulam R.F. West portion.	0·15	5·2	0·1	112	7·5	..
	5·30	5·0	0·1	140	6·0	..

APPENDIX XII—*cont.*

Data on Soil Analysis of Important Forest Areas.

Serial number and locality	*Sample from ground level in cm.*	*Soil recation.*		*Nutrient status.*		*Remarks.*
		P.H.	*EC in millimohos/ cm.*	*N percent organic-Carbon.*	*P in lbs. acre.*	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
20 Velangulam R.F. middle portion.	..	4·9	0·1	126	9·5	..
21 Pichavaram R.F. Casuarina.	..	6·5	0·1	98	5·0	..
22 Pichavaram R.F. Casuarina.	..	6·8	0·1	98	5·0	..
23 Pichavaram sorub area.	..	5·8	0·1	140	6·0	..
24 Pichavaram R.F. sorub area.	..	5·8	0·1	98	6·0	..
25 Pichavaram Excoecaria area.	..	6·4	3·0	84	6·0	..
26 Pichavaram Extension R.F.	..	6·2	10·0	70	14·0	..
27 Pichavaram Kumri area	..	6·3	10·0	224	7·5	..
28 Pichavaram Kumri area.	..	6·4	10·0	280	4·5	..
29 Pichavaram Rhizophora area	..	6·3	10·0	112	2·5	..
30 Kattayanallur U.R.L. unplanted area.	0·15	6·9	0·1	42	3·0	..
	15·30	7·0	0·1	112	10·0	..
31 Kattayanallur planted area.	..	7·0	0·1	98	5·0	..
32 Pandur U.R.L. 1965 Eucalyptus plot Pit 1.	..	9·3	0·25	231	6·0	..
33 Pandur U.R.L. 1965 Eucalyptus plot Pit 2.	..	7·9	0·2	260	0·0	..
34 Pandur U.R.L. 1965 Eucalyptus plot Pit 3.	..	9·3	0·35	269	6·0	..
35 Pandur U.R.L. 1965 Eucalyptus plot Pit 4.	..	9·7	0·2	172	0·0	..
36 Pandur U.R.L. 1965 Eucalyptus plot pit 5.		10·3	2·6	113	2·0	..
37 Pandur U.R.L. 1965 Eucalyptus plot pit 6.		9·1	0·2	218	1·6	..
38 Pandur U.R.L. 1965 Eucalyptus plot pit 7.		9·3	0·2	139	0·0	..
39 Pandur U.R.L. 1965, Eucalyptus plot pit 8.		8·5	0·2	290	10·0	..
40 Pandur U.R.L. 1965 Eucalyptus plot pit 9.		10·0	0·5	185	2·0	..
41 Pandur U.R.L. 1965 Eucalyptus plot pit 10.		9·6	0·2	235	5·2	..
42 Pandur U.R.L. 1965 Eucalyptus plot pit 11.		9·5	0·25	248	7·2	..
43 Pandur U.R.L. 1966 Eucalyptus plot 12		10·3	3·2	147	0·0	..
44 Pandur U.R.L. 1966 Eucalyptus plot 13		9·0	0·2	118	4·0	..
45 Pandur U.R.L. 1966 Eucalyptus plot 14		10·6	0·8	151	8·0	..
46 Pandur U.R.L. 1966 Eucalyptus plot 15		10·8	2·0	118	2·0	..
47 Pandur U.R.L. 1966 Eucalyptus plot 16		9·5	0·2	433	10·0	..
48 Pandur U.R.L.1966 Eucalyptus plot 17		10·1	0·2	88	0·0	..
49 Pandur U.R.L. 1966 Eucalyptus plot 18		9.8	1·4	386	4·8	

APPENDIX XII—*cont.*

DATA ON SOIL ANALYSIS OF IMPORTANT FOREST AREAS.

Serial number and locality.	*Sample from ground level in cm.*	*Soil recation.*		*Nutrient status.*		*Remarks.*
		P. H.	*EC in millimhos/cm.*	*N percent organic Carbon.*	*P in lbs. acre.*	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
50 Pandur U.R.L. 1966 Eucalyptus plot 19	..	8·5	0·35	441	2·4	..
51 Pandur U.R.L. 1966 Eucalyptus plot 20	..	10·0	0·3	395	0·0	..
52 Pandur U.R.L. 1966 Eucalyptus plot 22	..	9·9	0·25	319	0·0	..
53 Pandur U.R.L. 1960 pit 23	..	7·9	0·02	517	0·0	..
54 Pandur U.R.L. 1960 pit 24	..	10·6	1·9	521	8·8	..
55 Pandur U.R.L. 1960 pit 25	..	10·5	1·8	105	4·8	..
56 Pandur U.R.L. 1960 pit 26	..	7·5	0·2	197	7·2	..
57 Pandur U.R.L. 1964 pit 27	..	10·7	0·7	168	0·0	..
58 Pandur U.R.L. 1963 pit 28	..	8·0	0·2	214	4·0	..
59 Pandur U.R.L. 1964 pit 29	..	8·0	0·2	357	0·0	..
60 Pandur U.R.L. 1962 pit 30	..	10·5	1·2	433	6·4	..
61 Pandur U.R.L. 1962 pit 31	..	7·8	0·2	218	0·0	..
62 Pandur U.R.L. 1962 pit 32	..	8·3	0·2	323	0·0	..
63 Sirupakkam U.R.L. 1965 plot pit 1 ..	..	9·0	0·6	441	4·4	..
64 Sirupakkam U.R.L. 1965 plot pit 2 ..	..	9·0	0·2	361	8·0	..
65 Sirupakkam U.R.L. 1965 plot pit 3 ..	..	7·8	0·2	382	3·2	..
66 Sirupakkam U.R.L. 1965 plot pit 4 ..	..	7·9	0·2	277	9·2	..
67 Sirupakkam U.R.L. 1965 plot pit 5 ..	..	8·4	0·25	281	6·0	..
68 Sirupakkam U.R.L. 1965, plot pit 6 ..	..	7·9	0·2	592	4·4	..
69 Sirupakkam U.R.L. 1965 plot pit 7 ..	..	7·6	0·2	197	4·4	..
70 Sirupakkam U.R.L. 1965 plot pit 8 ..	..	7·2	0·2	739	8·0	..
71 Sirupakkam U.R.L. 1965 plot pit 9 ..	..	7·0	0·2	..	8·0	..
72 Sirupakkam U.R.L. 1965 plot pit 10	..	8·5	0·2	042	4·0	..
73 Sirupakkam U.R.L. 1965 plot pit 11	..	7·7	0·2	277	6·4	..
74 Sirupakkam U.R.L. 1965 plot pit 12	..	7·2	0·2	353	11·2	..
75 Sirupakkam U.R.L. proposed 1966 plot pit 13.	..	10·4	0·9	638	8·0	..
76 Sirupakkam U.R.L. proposed 1966 plot pit 14.	..	9·4	0·2	391	4·0	..
77 Sirupakkam U.R.L. proposed 1966 plot pit 15.	..	8·3	0·2	231	3·2	..
78 Sirupakkam U.R.L. proposed 1966 plot pit 16.	..	7·4	0·2	449	4·8	..
79 Sirupakkam U.R.L. proposed 1966 plot pit 17.	..	7·7	0·2	601	4·8	..
80 Sirupakkam U.R.L. proposed 1966 plot pit 18	..	7·6	0·2	197	4·4	..
81 Sirupakkam U.R.L. proposed 1966 plot pit 19	..	7·3	0·2	504	5·6	..
82 Sirupakkam U.R.L. proposed 1966 plot pit 20	..	7·2	0·2	735	15·2	..
83 Sirupakkam U.R.L. proposed 1966 plot pit 21	..	8·3	0·2	399	6·0	..

APPENDIX XII—*cont.*

DATA ON SOIL ANALYSIS OF IMPORTANT FOREST AREAS—*cont.*

Serial number and locality.	*Sample from ground level in cm.*	*Soil recation.*		*Nutrient status.*		*Remarks.*
		P.H.	*EC. in millimbor/om*	*N percent organic-Carbon*	*P in lbs. acre.*	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
84 Sirupakkam U.R.L. proposed 1966 plot pit 22.		..	9·5	0.4	106	5·6
85 Sirupakkam U.R.L proposed 1966 plot pit 23.		..	8·9	0·7	118	2·0
86 Sirupakkam U.R.L. proposed 1966 plot pit 24.		..	7·6	0·2	151	6.4
87 Sirupakkam U.R.L. proposed 1966 plot pit 25.		..	7·6	0·2	365	4 8
88 Sirupakkam U.R.L. proposed 1966 plot pit 26.		..	10·0	0·25	361	4·8
89 Sirupakkam U.R.L. proposed 1966 plot pit 28.		..	7·3	0·2	145	9·6
90 Sirupakkam U.R.L. proposed 1966 plot pit 29.		..	7·7	0·2	890	22·8
91 Sirupakkam U.R.L. proposed 1966 plot pit 30		..	7·7	0·2	991	5·6
92 Sirupakkam U.R.L. 1966 area pit 31.		..	7·4	0·2	128	20·8
93 Sirupakkam U.R.L. 1966 area pit 32.		..	7·8	0.2	983	4·8
94 Sirupakkam U.R.L. 1966 area pit 33.		..	7·2	0·2	974	8·0
95 Tiruthuraiyur 1962 casuarina area ..	0·18 15·30		7·2 7·0	0·2 0·2	122 349	13·2 18·8
96 Tiruthuraiyur 1962 casuarina area ..	0·15 15·30		6·9 7·0	0·2 0·2	168 084	8·0 10·4
97 Tiruthuraiyur 1962 casuarina area ..	0·15 15·30		7·0 7·0	0·2 0·2	113 067	10·4 4·3
98 Tiruthuraiyur 1932 casuarina area ..	0·15 15·30		7·0 7·0	0·2 0·2	126 206	7·2 7·6
99 Tiruthuraiyur 1962 casuarina area ..	0·15 ..		7·0 7·0	0·2 0·2	038 880	8·4 11·2
100 Tiruthuraiyur 1962 casuarina area ..	.. ..		7·1 7·1	0·2 0·2	080 080	13·2 8·4
101 Tiruthuraiyur 1965 casuarina area ..	.. ..		7·1 7·2	0·2 0·2	008 172	3·6 14·0
102 Tiruthuraiyur 1965 casuarina area ..	.. ..		7·1 7·9	0·2 0·2	050 171	10·0 8·4
103 Tiruthuraiyur 1963 casuarina ..	.. ..		7·0 7·4	0·2 0·2	168 130	11·6 7·6
104 Tiruthuraiyur 1963 casuarina ..	.. ..		6·9 7·0	0·2 0·2	067 084	4·[illegible] 11·6

Result of analysis.

Cashew areas.	*pH.*	*EC.*	*N*	*P*
	Normal to acidic.	Harmless ..	Very low to low ..	Very low to medium.
Pandur and Sirupakkam ..	Medium to alkaline	Medium Saline ..	Very low to medium.	Very low to low rarely medium to high.
Malattar at Tiruthuraiyur ..	Normal.	Harmless ..	Very low ..	Low to medium
Mangrove at Pichavaram ..	Do.	Harmless injurious.	Very low to low	Very low to medium.

APPENDIX XIII.

LIST OF FAUNA IN CUDDALORE SOUTH DIVISION.

Common names. (1)	*Zoological names.* (2)
	MANUALS.
The Bonnet Macaque	*Macaca radiata Geoffroy*
The Slender Loris	*Loris tardigradus* Linn
The Panther	*Panthera pardus Linn*
Jungle cat	*Felia chaua*, Gull
The Small Indian Civet	*Viverricula Indica Geoffrey*
The Common Palm-Civet, or toddy Cat	*Paradoxurus hermaphroditus Schreber*
The Common Mungoose	*Herpestes edwardaii* Geoffrey
The Ruddy Mungoose	*Herpestes smithii*
The Jackal	*Gunia aurous* Linn
The Sloth Bear	*Melursus ursinus* Shaw
The smooth Indian Otter	*Lutrogale perspicillatala* Geoffrey
The Grey Musk Shrew	*Sunvus caorulous*
The Three Stripped Palm squirrel	*Funambulus palmarum* Linn
The Indian Gerbille	*Tatera indica Hardrow*
The Common House rat	*Rattus rattus*
The Indian Mole Rat	*Bandicota bengalensis* Grey & Hardew
Meted or soft-furred field rat	*Millardia meltada* Gray
The Indian Bush rat	*Golunda ellioti*
The Mole Bandicoot	*Bandicota malabarica*
House mouse	*Mus musculus*
The Indian Porcupine	*Hystri leucura Gray & Hadrew*
The Black-naped Hare	*Lopus micricollis* F. Cuy.
The Chital or Spotted deer	*Axis axia Exrl.*
The Indian Wild Boar	*Sua cristatus* wagn
The Pied Kingfisher	*Ceryle rudis* Linn.
The common Kingfisher	*Alcede atthia* linn
The white-breasted Kingfisher	*Haloyon amyzaensia* linn
The Hoopoe	*Upepa epopa* Linn
The House Swift	*Micropus affima* Gray
The Palm Swift	*Cypsiurus batassionsia* gray
The Indian Night Jar	*Caprimulgus asiaticus* latham
The Hawk-Cuckoo	*Heirococcy varius* vahl
The Pied Crested Cuckoo	*Chamater jacobinus Boddaert*
The Koel	*Tudynamia scolopaccus* linn
The crow Phaesant	*Centropus sinensia atephena*
The large Indian Parakeet	*Psittacula eupatria* linn
The Green parakeet	*Psittacula krameri scopoli*
The Brown Wood-Owl	*Strix indranec*
The Barn or Screech Owl	*Tyto alba scopoli*
The spotted Owlet	*Athene barama Temminck*
The King vulture or Pondicherry vulture	*Sarcogypa calous* Scopoli

APPENDIX XIII—*cont.*

LIST OF FAUNA IN CUDDALORE SOUTH DIVISION—*cont.*

Common names. (1)	*Zoological names.* (2)
MAMMALS—*cont.*	
The white basked Bengal Vulture	*Paeudogype bengal ensis Gmelin*
The Neophron or the White Scavenger Vulture	*Neophron pecnopterus* Linn
The Brahminy kite	*Heliaster indus Boddaert*
The Common pariah kite	*Milous migrans Boddaert*
The Pale Harrier	*Circus macrowns S. G.* Gmelin
The Shikra	*Astur badius* Gmelin
The Blue Rock Pigeon	*Columbia liva* Gmelin
The spotted Dove	*Streptopelia risoria* Linn
The Little Brown Dove	*S. Senegelensis* Linn
The Red Turtle Dove	*Oenopexplia transquebarica Hermann*
The Grey Jungle Fowle	*Gallus-Sonneratia* Tominick
The Rain Quail	*Coturnix coromandelicus* Gmelin
The Jungle Bush Quail	*Perdicula asiatica* latham
The Painted Patridge	*Frencolinus pictus* Gmelin
The Water Hen or the Indian Moorhen	*Gallinula chloropus* Linn
The purple Coot	*Porphyrio poliocephalus* Latham
The Common Coot	*Pulica alra* linn
The Indian Courser	*Cursorus Coromandelicus* Gmelin
The Red Wattled Lapwing	*Lobivanellus indicus Booddaert*
The Yellow wattled lapwing	*L. Malabarica Boddaert*
The little Ringed Plover	*Qharadrinus dubius* Scopoli
The Common River Tern	*Sterna Aurantia* Gray
The Little Cormorant	*Phalacocorax nigh or Vieillet*
The Darter or Snak-Bird	*Anhinga melanogaster* Pennant
The Jungle Crow	*Cortus macrorhynchos Wagler*
The Common house crow	*Corvus splandens Vicillot*
The Tree Pie	*Dondrocits vagebounda* Latham
The Jungle Bebbler or Seven Sisters	*Turdoides sommervillei* sykos
Redvented sulbul	*Malpaster cafer* linn
The Red-Whiskered bubul	*Otocompsa JOCOSA* linn
The white browned bubul	*Pycnonotus lutcolus* lesson
The Indian Magpis Robin	*Saxicoloidos fulicata* linn
The paradise fly-catcher	*Ichitrea pardisii* linn
Bay-backed shrike	*Lanius vittatus valen*
The little Minivet	*Pericrocotus perogrinus* linn
The black Drongo or King Crow	*Dicrurus macrocorens* vieillet
The Tailer Biard	*Orthetomus autorius Pennent*
The Fan tailer Warbler	*Ciaticola juncides Refinesque*
The Jungle Wren Warbler	*Prinia sylveties Jerdon*
The Indian Wren-Warbler	*Prinia inornata* sykos

APPENDIX XIII—*cont.*

LIST OF FAUNA IN CUDDALORE SOUTH DIVISION—*cont.*

Common names. (1)	*Zoological names.* (2)
	MAMMALS—*cont.*
The Golden Oriole	*Oriolus oriolus* linn
The Black-headed Oriolo	*Oriolus xanthornus* linn
The Brahminy myna	*Tomenuchus pagodarus* Cmelin
The Common Myna	*Acridotheres tristia* linn
The Weaver Bird	*Plecqus philippinus* linn
The Striated Weaver bird	*Plocous manyar Horafield*
The White-throated Munis	*Uroloucha malabarica* linn
The Spotted Munio	*Uroloucha nunctulata* linn
The Black-heading Munia	*Munia malacca*
The Indian Rouse sparrow	*Paaser demesticus* linn
Yellow-throated sparrow	*Gynnorhis xanthocellis* Burton
The Yellow Wagtail	*Mctacilla flava* linn
The little shylark	*Alanda gularla franklin*
The Madras Bush-Lark	*Mirafra affisia*
Ashy Crowned Finch lark	*Bromopteryx wrises* Scopoli
The Purple Sun Bird	*Cinnyria asiatious Lathan*
The Purple rumped Sun Bird	*Cinnyria xoylonicus* linn
The Golden backed wood-pecker	*Brachypternus benghalensia* linn
The Common or Green Bee eater	*Merops oriontalia* linn
The White Ibis	*Threskiornis melanocophalus* Linn
The Spoon Bill	*Plataba leucorodia* Linn
The Open billed Stork	*Anastomus escitana* Boddaert
The Common Heron or Grey Heron	*Ardea cinersa* Linn
The Little Egret	*Egretta garzetta* linn
The Cattle Egret	*Bubulcus ibia* Linn
The Pond Heron or Paddy Bird	*Ardeola gravii* sykes
The Night Heron	*Nycticorax nycticorax* Linn
The Cotton Joal	*Nettapus coromandelianus* Gmelin
The Common Teal	*Nettion crecca* Linn
The Little Grebe or Dabchick	*Pedicepa ruficollia* Pallas
	REPTILES.
Crocodile	*Crocodilus porosus*
Tortoise	*Gecmyda Trijuga*
Monitor Lizard	*Varanus moniter*
Tree Lizard	*Caletea Veraicolor*
Ground lizard	*Mabuya carinata*
The Green Lizard or Chame oleon	*Chomaelcon Zeylanicus*
Russel's Viper or Daboida	*Vipora resselli*
Saw scaled Viper or Echia or Phoorsa	*Echia carinate*

APPENDIX XII—*cont.*

LIST OF FAUNA IN CUDDALORE SOUTH DIVISION—*cont.*

Common names.	*Zoological names.*
(1)	(2)
REPILES—*cont.*	
The Cobra	*Naia tripudiana*
The Slender Coral Snake	*Calliphia trimaculatus*
The Common krait	*Bungarus caeruleua*
The Rock or Indian Python	*Pythan molurus*
The common water snake or Dhaman	*Zamensia mucusus*
Sand snake	*Psammophia condaranus*
Common Wolf snake	*Lycodon sulicus*
Common Pond snake or Keel back	*Tropidonotus piscater*
Indian Bronzebacked tree snake	*Dendrolaphis Triatis*
Brown spackled whip-snake	*Dryophis pulveruleutus*
Zebra snake	*Chersydrus granulatus*
Nellai Pambu	*Cerborus mhynchopa*
Valakkadian	*Euhydrina valakkadian*

APPENDIX XIV.

Alphabetical List of Flora of Cuddalore South Division.

Abbreviations used.

Col. 2—Syn.	=	Synonym.
Col. 4—H.	..	Habit and Habitat.
(aq.)	..	Aquatie.
C.	..	Climber.
CH.	..	Climbing herb.
Csh.	..	Cllmbing shrub.
(Cult)	..	Cultivated.
(G)	..	Grass.
H	..	Herb.
(Mang)	..	Mangrove
Sh.	..	Shrub.
ST.	..	Small tree.
T.	..	Tree.
Ush.	..	Under-shrub.
Col. 6.—Importance.		
f.	..	Fodder.
fe.	..	Fibre.
fr.	..	Fruit.
fw.	..	Fuelwood.
m.	..	Medicinal.
o.	..	Ornamental.
St.	..	Small timber.
t.	..	Timber.
tn.	..	Tannin.
veg.	..	Vegetable.

NOTE:—The list includes the latest changes in nomenclature.

59-21—30A

Serial number and name of the plant. (1)	Family. (2)	Habit. (3)	Tamil name. (4)	Importance. (5)
1 Abelmoschus esculentus (E) Moonch (Syn. Hibiscus esculentus Linn).	Malvaceae	H (Cult.)	Vendai	Veg.
2 Abelmoschus ficulneus (L) W. & A.	Do.	H	....	....
3 Abildgaardia monostachya (L) Vahl	Cyperaceae	H	....	....
4 Abrus precatorius Linn	Leguminosae (pap.)	C	Kundumani	m, weight.
5 Abutilon asiaticum G. Don	Malvaceae	H	....	....
6 Abutilon Crispum G. Don	Do.	H	....	....
7 Abutilon hirtum G. Don	Do.	H	Vadathuthi	m.
8 Abutilon indicum (Linn) Sw	Do.	H	Paniyarathuthi	m.
9 Acacia arabica Willd	Leguminosae (mim)	T	Karuvelam	St., m., f..fw., tn.,
10 Acacia farnesiana Willd	Do.	Sh	Kasthurivel	Cassia perfumem
11 Acacia canescens Grah	Do.	Sh	....	....
12 Acacia ferruginea DC	Do.	T	Parambai	st., m.
13 Acacia latronum Willd	Do.	ST	Kodamullu	fw., Fence
14 Acacia leucophloea willd	Do.	T	Velvelam	St., fw., f., Soap., m.
15 Avacia rugata (Lamk.) Ham (Syn. A. Coninna DC)	Do.	Sh	Seekai	Soap, m.
16 Avacia sundra	Do.	St	Karungali	St., fw.,
17 Acalypha alnifolia Kl	Eupho rbiacene	Sh	....	....
18 Acalypha fruticosa Fo sk	Do.	sh	Sinni	m.
19 Acalypha indica Linn	Do.	H	Kuppaimeni	m.
20 Acalypha lanceolata Willd (Syn. Acalypha Paniculata Miq.)	Do.	H	....	....
21 Acalypha racemosa Wallex Ba ill	....	Sh	....	....
22 Acanthospermum hispidum DC	Compositae	H	....	....
23 Acanthus ilicifolius Linn	Acanthaceae	SH	Kazhimulli	m.

24	Achyranthes aspera Linn	Amarantaceae	H	Nayuruvi	m.	
25	Acorus calamus Linn	Araceae	H (aq.)	Vasambu	m,	
26	Adhatoda vasica Nees	Acanthaceae	HH	Adathodai	hedge,	
27	Adina cordifolia hook f.	Rubiaceae	T	Manjakadambai	t, m.	
28	Aegiceras corniculatus (L) Blanco	Myrsinaceae	SH	Narikandan	tn., n.	
29	Aegle marmelos Corr.	Rutaceae	T	Vilvam	m.	
30	Aeluropus lagopoides Trinex Thu	Gramineae	G	....		....
31	Aerva javanica (Burn f. Spreng.)	Amarantaceae	USH	....		....
32	Aerva lanata Juss	Do.	U, Sh	Poolai	m.	
33	Aerva monsoniae Mart	Do.	H	....		....
34	Avschynomene aspora Linn	Leguminosae (Pap.)	Sh (Aq.)	Attu notti	Sola Pit.	
35	Avschynomeneindica Linn	Do.	U. Sh.	....		....
36	Aganosma cymosa G. Don	Aslopiadaceae	C	....		....
37	Aganosma dichotoma K. Schum	Do.	C	....		...
38	Agave americana Linn	Amaryllidaceae	H	Bail kathazhai	fe., m.	
39	Agave sisalana Perr	Amaryllidaceae	H	....	fe., m.	
40	Ageratum conyzoides Linn	Compositae	H	Pumpillu	m.	
	Agyneria baceifornis A. Juss see Synostemon baceiforme (L) Webster.	Euphorbia ceae	H	....		....
41	Ailanthus excelsa Roxh	Simarubaceae	T		Matchwood	
42	Alangium salviifolium (Linn f.) Wing	Alangiaceae	ST	Azhigi		....
43	Albizzia amara Boiv	Leguminosae (Mim)	T	Thurinji Usil	fw.	
44	Albizzia lebbeck Benth	Do.	T	Vagei.	t., f., m.	
45	Albizzia odoratissima Benth	Do.	T	Karivagai	t., m.	
46	Allamanda cathartica Linn	Apocynaceae	SH (Cult.)	....	O.	
47	Allium cepa Linn	Liliaceae	H	Vengayam	Veg.	
48	Allium sativum Linn	Do.	H (Cult.)	Poondu	Veg.	

Serial number and name of the plons. (1)	Family. (2)	Habil. (3)	Tamil name. (4)	Importonce. (5)
49 Allophyllus serratus Radlk	Sapindaceae	ST	....	....
50 Alloteropsis cimicina Stapf	Graminaea	G	....	....
51 Aloe barbadensis Mik (Syn. Aloe-Vera Linn)	Liliaceae	....	Sothu kattazahai	m.
52 Alternanthera sessilis (Linn) DC	Amarantaccae	H	Ponnanganni	m., Veg.
53 Althaea rosea Car	Malvaceae	H (Cult)	....	O., m.
54 Alysicarpus monilifer DC	Leguminosae (pap).	H	....	f.
55 Alysicarpus vaginalis DC	Do.	H	....	f.
56 Amarantus gangeticus Linn	Amarantaceae	H	Mullukeerai	Veg.
57 Amarantus mangostanus Linn	Do.	H	....	....
58 Amarantus Polygamus Linn	Do.	H	....	....
59 Amarantus spinosus Linn	Do.	H	Mullukeerai	Veg.
60 Amarantus viridis Linn	Do.	H	Kuppaikeerai	....
61 Ammania baccifera Linn	Lythraceae	H (aq.)	Neermelneruppu	m.
62 Ammania octandra Linn	Do.	H (aq.)	....	....
63 Amorphophallus campanulatus Bl.	Araceae	H (Cult.)	Karunaikizhangu	Veg., m.
64 Ampelocissus latifolia Planch	Vitaceae	Cl	Kattukodimundiri	....
65 Amphilophis kuntzeana Haines	Gramineae	G	....	....
A Pertusa Stapf. (see Bothrioch loa pertusa (L) A Camus.	Do.	G	....	....
66 Anacardium occidentale Linn	Anacardiaceae	T	Mundiri	Nuts, oil, tn., fr., m.
67 Ananas comosus (1) Merr. (Syn. Ananas sativus Schult).	Bromeliaceae	....	Annasi	fr.
68 Andrographis eclrioides Nees	Acanthacene	H	Gopuram thangi	....
69 Andrographis paniculata Nees	Do.	H	La-vembu	m.
70 Andrographis serpyllifolia W	Do.	H	....	....
Anoilema dimorphum Dalz see Murdannia dimorpha (Dalz) Brucken.	Commonlinaceae	H	....	....
Anolema spiratum R. Br. see Murdannia spirata (L) Bruckn.	Do.	H	....	....

	Anolema nudiflorum R. Br. see Murdannia nudiflorum Bionon).	Commen linaceae	H	....	....
	Anoilem vaginatum R. Br. (see Murdannia vaginatum (L) Brucken.	Do.	H	....	....
71	Ang elonia sparsiflora	Scrophulariaceæ	H	....	o
72	Anisochilus carnosus Wall	Labiatæ	H	Karpuravalli	m
73	Anisomeles indica O Kze	Do.	....	....	
74	Anisomeles malabarica R. Br	Do.	Sh	Pey-miratti	m
75	Anogeissus latifolia Wall	Combretaceæ	T	Vellainagai	t
76	Antidesma diandrum Rotu	Euphorbiaceæ	T	....	
77	Antigonon loptopus Hk & A	Polygonaceæ	Cah (Cult).	....	O
78	Apocopis wightii Nees	Gramineæ	....	....	
79	Apluda aristata Linn	Do.	....	....	
80	Arachis hypogaea Willd	Leguminosæ (Pap)	H (Cult).	Nilakadalai Kottikizhangu.	Oil edible tubers.
81	Aponogeton natans Engl. & Kr	Aponogotonaceæ	H (aq).	....	....
82	Ardisia solanacea Roxh	Myrsinaeæ	Sh	....	....
83	Areca catechy Linn	Palmaceæ	T (Cult).	Pakku, Kamugu	Nuts.
84	Argomone mexicana Linn	Papaveraceæ	H	Brahmadandu	M
85	Argyroia cuneata Ker Gawl	Convolvulaceæ	Sh	....	....
86	Argyreia cymosa Sweet	Do.	C	....	....
87	Argyreia nervosa (Burn-f-Boj) (Syn. A. speciosa sweet).	Do.	C	Samudrapachai	M
88	Aristida depressa Retz	Gramineæ		Oosipullu	....
89	Aristida funiculata Trin & Rupr	Do.		....	....
90	Aristida hystrix Linn	Do.		....	....
91	Aristida setacea Retz	Do.		Thudaipapullu	Broom.
92	Aristolochia bracteata Lamk	Aristolochiaceae	H	Anduthinnapalai	m
93	Aristolochia indica Linn	Do.	C	Iswaramooli	m

94	Artabotrys uncinatus (Lamk) Merr (Syn. A. odoratissimum R. Br.).	Annonaceæ	C	Manoranjitham	o
95	Arthrocn nemum fruticosum Moq.	Chenopodiaceæ	Sh	Tolkodukku	....
96	Arthoindicum Moq	Do.	Ush	Do.	m
97	Artocarpus heterophyllus Lam (Syn. A. integrifolia Linn).	Moraceæ	T	Pala	t, fr. m
98	Arundinella setosa Trin	Gramineæ	....	....	
99	Arundo donax Linn	Do.	Sh	....	....
100	Asclepias curassavica Linn	Asclepiadaceæ	H	....	m
101	Asparagus racemosus Willd	Liliaceæ	C	Shadavari	m
	Asteracantha longifolia (L) Nees. *See*—Hygrophila auricula (Schunach) Heine	Acanthaceæ	M	....	....
102	Asystasia gangetica T And	Acantheeæ	H	Neermulli	m
103	Atalantia monophylla Corr	Rutaceæ	T	Kattu elumichai Kichili.	m
104	Atalantia racemosa W & A	Do.	T (Mang).	Kattunarangam	....
105	Avicennia marina Vierh	Verbenaceæ	T (Mang).	Ven-kandan	f, fw, tn.
106	Avicennia officinalis Linn	Do.	T	Karunkandan	Do.
107	Averrhoa Nilimbi Linn	Geraniaceæ	T	Upattha	fr.
108	Azadirachta indica A. Juss	Meliaceæ	T	Vembu	oil.
109	Azima tetracantha Lam	Salvadoraceæ	Sh	Sanku	m
110	Bambusa bamboos Druce (Syn. Bambusa arundinacea willd).	Gramineæ	T	Peru-moongil	Bamboo pump m.
111	Barloria acuminata Willd	Acanthaceæ	U.Sh	....	....
112	Barloria buxifolia Linn	Do.	Sh	....	....
113	Barloria cristata Linn	Do.	U.sh	....	....
114	Barloria cuspidata Heyne	Do.	Sh	....	....
115	Barloria longiflora Linn f.	Do.	Sh	....	....
116	Barloria prionitis Linn	Do.	Sh	Mullu-kanakambaram Sem-muli	....

117	Barloria tomentosa Roth	Do.	U.Sh	....	....
118	Barringtonia actutangula Gærtn	Lecythidaceæ	T	Kadappam	....
119	Basella rubra L	Chenopodiaceæ	C (Cult)	Pasalai	....
	Bassia longifolia Linn [See Mudhaca longifolia (Linn). Mac bride].	Sapotaceæ	T	Illuppai	....
120	Bauhinia racemosa Lam	Leguminosæ (Cae)	T	Aathi	....
121	Bauhinia tomentosa Linn	Do.	Sh	Kanjanai, Aathi	....
122	Benincasia hispida (Thunb) Cong. (Syn. Benincasia cerifera Savi).	Cucurbitaceæ	H	Poosani	....
123	Bergia ammannioides Roxb	Elatinaceæ	H	....	....
124	Bergia capensis Linn	Do.	H	....	....
125	Bidens pilosa Linn	Compositæ	H	....	....
126	Biophytum sensitivum DC	Geraniaceæ	H	Tottalvadi	....
127	Blainvillea acmella (L.f.) Philipston (Syn. Blainvillea rhomboidea Cass).	Compositæ	H	....	....
128	Syn. Blepharis bœrhaaviæfolia Pers Blepharis maderaspatonsis (L) Heyne ex Roth.	Acanthaceæ	U. Sh	....	....
129	B. mlluginifolia Pers	Do.	U.Sh	....	....
130	Blumea obliqua (Linn) Druce (Syn. Blumea amplecten DC.	Compositæ	H	....	....
131	Blumea mollis (D.Don.) Merr (Syn. B. wightiana DC).	Do.	H	....	....
132	Blyxa octandra Planch	Hydrocharitaceæ	H (aq)	....	....
133	Boerhaavia chinensis (Burm f) Drucea (Syn. B. repanda Willd).	....	....	....	....
134	Boerhaavia diffusa Linn	Myctaginaceæ	H	Mookarattai	....
135	Boerhaavia verticillata Poir	Do.	H	....	....
	Bombax malabaricum DC.				
	See Salmalia malabarica.				
136	Borassus flabellifer Linn	Palmaceæ	T	Panai	fr, fe.
137	Borreria articularis (Linn f.) F. N. Will (Syn. Borreria hispida K. Sch).	Rubiaceæ	H	Nathaichoori	m
138	Borreria stricta K. Sch	Do.	H	....	m
139	Bothriochloa pertusa A Camus (Syn. Amphilophis pertusa stapf).	Gramineæ	G	....	f

Serial number and name of the plant, (1)	Family. (2)	Habit. (3)	Tamil name. (4)	Importances, (5)
140 Bougainvillaea glabra Choisy	Nyctaginaceæ	C.Sh (cult)	....	o
141 Bougainvillæa spectabilis Willd	Do.	Do.	....	o
142 Brachiaria distachya Stapf	Gramineæ	..	....	f
143 Brachiaria cruciformis Griseb	Do.	..	....	f
144 Brachiaria ramosa Stapf	Do.	..	....	....
145 Brassica nigra Koch	Cruciferæ	H (cult)	Kadugu	condiment.
146 Brassica oleracea Linn	Do.	Do.	Cabbage	Veg.
Breynia patens Rolfe	Euphorbia ceæ	Sh	....	....
see Molanthesa turbinata (Koen. ex. Roxb.) Oken.				
Brassica rhamnodies M. Arg	Do.	Sh	Mani-pulnati, Singapu-pula.	....
See Melanthesa rhamnoides (Roc) DBI.				
147 Bridelia retusa sprong	Do,	ST	Muttu Marudu Ada-marudu Siru-vengai.	t
148 Bruguera cylindrica W & A	Rhizoporaceae	ST	Pannikuthi	fw, ta
149 Bryonopsis laciniosa Naud	Cucurbitaceae	C	Ivelangai	....
150 Bryophyllum pinnatum (Lamk) Oken	Crassulaceae	SH (Cult)	....	o.
151 Buchanania angustifolia Roxb	Anacardiaceae	ST	Sara-Paruppu	m, edible nuts.
152 Buchanania lanzan Spreng	Do.	T	Kattu-ma, Morala	m.
153 Buchaera hispida Ham	Scrophulariaceae	H	....	....
154 Bulbostylis barbata Kunth	Cyperaceae	H	Mookutikorai	....
155 Bulbostylis puberula Kunth	Do.	H	....	....
156 Butea monosperma (Lank) Tanb. Syn. B. frondosa Koen).	Leguminosae (Pap)	T	Purasu	ls, m.
157 Cadaba fruticosa (L) Druce (Syn.) Cadaba indica Lank).	Capparidaceae	SH	Vizhudi	m.
158 Caesalpinia bondus (Linn) Roxb.	Leguminosae	SH	Kazharchi-kai	m.
159 Caesalpinia decaptetala (Roth) Albton (Syn. C. Sepiaria Roxb.)	Do.	SH	....	....

160	Cajanus cajan (Linn). Syn. C. indicus Sprong	(Pap)	H (Cult)	Tovarai	Dal, m.
161	Calamus rotang Linn	Palmaceae	C. Sh.	Pirambu	Cane, m.
162	Calophyllum, inophyllum Linn	Guttiforae	T	Punnai, Pinnai	o, m, om.
163	Calotropis gigantea R. Br	Aselipiadaceae	Sh	Erukku	m, flower.
164	Calpurnia aurea Bark	Leguminosae (Pap)	SH	....	....
165	Calycopteris floribunda Lam	Combrotaceae	C. Sa	Minnal-kodi, Monan-kodi	o, m.
166	Canavalia ensiformis DC	Leguminosae (Pap)	C	Vellai-thambattai	m.
167	Canavalia lineata DC	Do.	Trailer	....	....
168	Canavalia virosa W and A	Leguminosae (Pap)	C	....	....
169	Canna indica Linn	Cannaceae	H (Cult)	Kottai-vazhai	o.
170	Canseora decurrens Dalz	Contianceae	H (aq).	....	....
171	Canseora docussata R and S	Do.	Do.	....	m.
172	Canseora diffusa R. Br.	Do.	Do.	....	....
173	Canscora heteroclita (L) Gilg (Syn. C. Sessiliflora R & S)	Do.	Do.	....	....
174	Canthium dicocum (Gaertn.) Merr.	Rubiaceae	ST	Neekini, teranai	....
175	Capparis brevispina DC	Capparidaceae	SH	....	....
176	Capparis sepiaria Linn	Do.	Sh.	Kurinjwai	m.
177	Capparis stylosa DC	Do.	ST	Toratti	....
178	Capparis zylanica Linn	Do.	C. Sh.	Atanday	m.
179	Capsicum annum Linn	Solanaceae	H	Milagai	Spice.
180	Capsicum frutescens Linn	Do.	Sh	Do.	Do.
181	Caralluma adscendens R.Br	Asclepiadaceae	H	....	....
182	Caralluma attenuata W	Do.	H	....	....
183	Caralluma campanulata N.E. Br	Do.	H	....	....
184	Caralluma indica N.E. Br.	Do.	H	....	....
185	Caralluma umbellata Haw	Do.	H	....	....

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(1)	(2)	(3)	(4)	(5)
186 Cardanthera balsamica Cl	Aeanthaceae	H (aq)	....	....
187 Cardiospermum caneseens Wall	Sapindaceae	CH	....	....
188 Camdiospermum halicacabum Linn	Do.	CH	Mudakathan	m.
189 Cariea papaya Linn	Caricaceae	T (Cult)	Pappali	fr.
190 Carissa carandus Linn	Apocynaceae	ST	Kala	fr.
191 Carissa spinarum Linn	Do.	Sh	Siru-kala	fr.
192 Carmona microphylla (Lamk) Don C. Syn. Ehretia microphylla (Lamk).	....	....	....	....
193 Casearia elliptica Willd (Sym. C. tomentosae Roxb)	Samydaceae	Sh	Kadichai	m.
194 Cassia absus Linn	Leguminosae (Caes)	H	Mulaipalvirai	m.
195 Cassia auriculata Linn	Do.	SH	Avaram	tm, m.
196 Cassia fistula Linn	Do.	T	Konrai	o, tn, m.
197 Cassia surattensis Burn f. (Syn. C-glauca Lamk)	Do.	Sh	....	....
198 Cassia kloini W & A	Do.	U, Sh	....	....
199 Cassia marginata Roxb	Do.	ST	....	....
200 Cassia montana Hoyno	Do.	T	Karumkonrai	....
201 Cassia occidentalis Linn	Do.	U. Sh.	Ponnavarai	m.
202 Cassia pumila Lamk	Do.	U.Sh	....	
203 Cassia siamea Lamk	Do.	T	Manjakonnai	....
204 Cassia sophera Linn	Do.	U.Sh	Ponnavarai, Sular	m
205 Cassia tora Linn	Do.	U.Sh	Tagarai	m
206 Cassytha filiformis Linn	Lauraceae	C (Farasite)	Erumaikottan	m
207 Casuarina equisetifolia Forst	Casuarina ceæ	T (Cult)	Savukku	fw
208 Casuarina junghuniana	Do.	Do.	....	t
209 Catharanthus pusillus (Murr.) G. Don (Syn. Vinea pusilla Murr.)	Apocynaceae	H	....	m

210	Catharanthus roseus (L) Don (Syn. Vinca rosea Linn) ..	Do.	U.Sh ..	Patti	m,fl
211	Cayratia carnosa Gagn	Vitaceæ	C ..	Naruli	....
212	Ceiba pentandra (Linn) Gærtn	Bombacaceæ	T (Cult) ..	Ilavu	floss
213	Celastrus paniculata Willd	Celastraceæ	C.Sh ..	Valuluvai	m
214	Celosia argentea Linn	Amarantaceæ	H ..	....	Weed
215	Celosia cristata Linn	Do.	H (Cult) ..	Cock's comb	o
216	Celosia polygonoides Retz	Do.	H ..	....	....
	Celsia coromandeliana Vahl *see* Verbascum coromandelianum (Vahl) O. Kze.	Scrophulariaceæ	H ..	....	....
217	Celtis cinnamomea Lindle	Ulmaceæ	ST ..	Pinari, Kodalimuruki, Kalluvirai.	m
218	Celtis wightii Planch	Do.	St ..	Do.	m
219	Centella asiatica Urban	Umbelliferæ	H ..	Vallarai	m
220	Centipeda minima (L) A. Br et. Aschers (Syn. C. orbicularis Lour).	Compositæ	H ..	....	....
221	Centotheca lappacea Desv.	Gramineæ	H ..	....	....
222	Ceratophyllum demersum Linn	Ceratophyllaceæ	H (aq) ..	....	m
223	Cerens hexagonus	Cactaceæ	....	Kalli	....
224	Ceriops roxburghiana Arn	Rhizophoraceæ	Sh (Mangrove) ..	Siru-kandan	....
225	Ceropegia bulbosa Roxb	Asclepiadaceæ	C ..	....	m
226	Ceropegia juncea Roxb	Do.	C ..	....	tuber
227	Ceropegia tuberosa Roxb	Do.	C	....	Do.
228	Cestrum moeturnum	Solanacene	Sh (Cult) ..	....	o
229	Chionachne semiteres (C. Fisch)	Gramineæ	....	—..	f
230	Chloris dolichostachya Lag	Do.	....	—..	f
231	Chloris inflata Link (Syn. C. barbata Sw)	Do.	....	——	f
232	Chlorophytum tuberosum Baker	Liliaceæ	H ..	....	
233	Chloroxylon swietenia DC	Nutaceæ	T ..	Borasu, Vaimaram ..	t
234	Chomelia asiatica O Kze	Rubiaceæ	Sh ..	Kura	....
231	Chrozophora prostrata Dalz	Euphorbiaceæ	H ..	....	....

Serial number and name of the plant.	Family.	Habit.	Tamil name.	Importance.
(1)	(2)	(3)	(8)	(5)
236 Chrozophora rotteri A Juss ex Spreng	Euphorbianceae	H	....	....
237 Chrysopogon aciculatus Trin	Gramineæ	..	....	f
238 Chrysopogon montanus Trin	Do.	..	....	f
239 Chrysopogon orientalis A. cam	Do.	..	....	....
240 Cicca acida (Linn) Merrill (Syn. Cicca disticha Linn)	Euphorbiaceæ	ST (Cult)	Aru-nelli	fr
241 Cicer ariotinum Linn	Leguminosæ	H (Cult)	Kadalai	Gram
242 Cipadessa baccifera Miq.	Rutaceæ	Sh	....	....
243 Cissampelos pariera Linn	Menispermaceæ	C	Appatta	m
244 Cissus pallida Planech	Vitaceæ	C	....	....
245 Cissus quadrangularis Linn	Do.	C	Pirandai	m
246 Cissus setosa Roxb.	Do.	C	....	....
247 Citrus maxima(Burm. Merr) (Syn. Citrus decumana Linn).	Rutaceæ	ST	....	....
248 Citrus medica Linn	Do.	ST	Narthai	m
249 Citrullus colocynthis Sehrad	Cucurbitaceæ	H	Peythummatti	m
250 Clausena dentata (Willd.) R.S. (Syn. Clausena willdonovii W & A).	Rutaceæ	ST	Potti, Kattukaruvepilai	....
251 Cleistanthus collinus Benth	Euphorbiaceæ	St	Nilai-palai, Odai, wodan	m, Poisonous
252 Cleome aspera Koen	Capparidaceæ	H	....	....
253 Cleome chelidonii Linn f	Do.	H	....	m
254 Cleome felina Linn f	Do.	H	....	....
255 Cleome gynandra Linn Syn. Gynandrapsis pentaphylla DC).	Do.	H	....	....
256 Cleome monophylla Linn	Do.	H	....	....
257 Cleome viscosa Linn	Do.	H	Naikadugu	....
258 Clerodendron inerme Gærtn	Verbenaceæ	Sh	Pikala, Pinari	m,o
259 Clitoria ternatea Linn	Leguminosæ	C	Kakkattan, Sangu-pushpam	m,o

260	Coccinia cordifolia (L) Cogn. (Syn. Coccinia indica W & A).	Cucurbitaceæ	C	Kovai	m
261	Cocculus hirsutus (L) Diels	Memispermaceæ	ST	Kattu-kodi	m
262	Cochlospermum religiosum (L) Alston (Syn. C. gossypium DC).	Bizaceæ	ST	Kongillam Kattilavu	...
263	Cocos nucifera Linn	Palmaceæ	T	Tennai	m,fe, oil
264	Codiacum variegatum Linn	Euphorbiaceæ	Sh (Cult)	Croton	o
265	Coix gigantea Roxb	Gramineæ	H	....	....
266	Coix lachryma jobi Linn	Do.	H	Nor-pavalam, Kattu-kundumani	f,m
267	Coldenia procumbens Linn	Boraginaceae	H	Seruppadai	m
268	Coleus barbatus Benth	Labiatae	H	....	....
269	Colocacia esculentum (Linn) Schott (Syn. C. antiquorum Schott).	Araceae	H	Seppam-kizhangu	Veg.
270	Commelina attenuata Koen	Commelinaceae	H	....	....
271	Commelina benghalensis Linn	Do.	H	....	....
272	Commelina clavata Cl	Do.	H	....	....
273	Commelina ensifolia R. Br	Do.	H	....	....
	Commelina nudiflora Linn *See* Murdannia malabarica (L) Brueckner.	Do.	H	....	....
274	Commelina paludosa Bl (Syn. C. obliqua Buch-Ham)	Do.	H	....	....
275	Commiphora berryi Engl	Burseraceae	ST	....	....
276	Commiphora candata Engl	Do.	ST	....	....
277	Corchorus æstuans Linn (Syn. C. acutangulus Lam)	Tiliaceaeae	H	....	....
278	Corchorus fascicularis Lam	Do.	H	....	....
279	Corchorus trilocularis Linn	Do.	H	....	....
280	Cordia dichotoma Forst (Syn. C. obliqua Willd)	Boraginace	T	Vidi	m
281	Cordia domestica Roth	Do.	Sh	....	....
282	Cordia evolutior Gamble n. Comb	Do.	T	....	....
283	Cordia gharaf (Forsk) Ehrenb & Asch (Syn. C. rothii R & S).	Do.	T	....	....

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284 Cordia monoica Roxb	Do.	ST	....	....
285 Cordia rothii R & S	Do.	ST	Narvilli	....
286 Coriandrum satirum Linn	Umbelliferae	H (Cult)	Kottu-malli	spice
287 Corypha umbraculifera	Palmae	T	Tali-panai	o
288 Crataeva unilocularis Ham (Syn. C. religiosa Forst)	Capparidaceae	T	Mavalingam	m
289 Cressa cretica Linn	Convolvulaceae	H		m
290 Crinum asiaticum Linn	Amaryllidaceae	H	Vishamoongil	m
291 Crinum defixum Ker	Do.	H		m
293 Crossandra undulaefolia Salisb	Acantuaceae	U.Sh (Cult)	Kanakambaram	o
292 Crinum latifolium Linn	Umbelliferae	H (Cult)	Kottu-malli	Spice, m
294 Crotalaria bifaria Linn	Leguminosae (Pap.)	H	....	....
295 Crotalaria biflora Linn	Do.	H	....	....
296 Crotalaria juncea Linn	Do.	H (Cult)	Sanappai	m
297 Crotalaria laburnifolia Linn	Do.	Sh	....	....
298 Crotalaria linifolia Linn f	Do.	H	....	....
299 Crotalaria medicaginea Lamk	Do.	H	....	m
300 Crotalaria paniculata Willd	Do.	U.Sh	....	....
301 Crotalaria prostrata Roxb	Do.	H	....	....
302 Crotalaria pusilla Heyne	Do.	Sh	....	....
303 Crotalaria retusa Linn	Do.	U.Sh.	....	....
304 Crotalaria verrucosa Linn	Do.	H	Kilukiluppai	....
305 Crotalaria willdenowiana DC	Do.	H	....	....
306 Croton bonplandianum Baill (Syn. Croton sparsiflorus Mor).	Euphorbiacease	H	Ammanakkupoondu	Wood.
307 Cryptocoryno ciliata Fisch	Araceae	H (aq.)	....	....
Cryptocoryno rotrospiralis Kunth	Do.	H (aq.)	....	....

309	Cryptolopis buchanani R and S	Asclepiadaceae	C	....	....
310	Cryptostogia grandiflora R. Br.	Do.	C (Cult)	....	o.
311	Curculigo orchioodes Gaertn	Amaryllidaceae	H	Nilapanai	m.
312	Curcuma amada Roxb	Zingiberaceae	H (Cult)	Mainji	....
313	Curcuma aromatica Salisb	Do.	Do.	Kasturimanjal	m.
314	Curcuma longa Linn	Do.	Do.	Manjal	m.
315	Cuscuta chinensis Lam	Convolvulaceae	C (Parasite).	....	....
316	Cuscuta hyalina Roth	Do.	Do.	....	....
317	Cuscuta reflexa Roxb	Do.	Do.	....	....
318	Cyamopsis tetragonolobus (L) Taub	Leguminosae (Pap.)	H (Cult)	Kothavarai	Veg.
319	Cyanotis axillaris R and S	Commelinaceae	H	....	....
320	Cyanotis cristata Schultf	Do.	H	....	....
321	Cyanotis papilionacea Schultf	Do.	H	....	....
322	Cyanotis tuberosa schultf	Do.	H	....	....
323	Cycas ciricinalis Linn	Cycadaceae	T	Madana-kaman Kodi-eechan.	....
324	Cymbopogon coloratus Stapf	Gramineae	....	Manda-pillu	....
325	Cymbopogon flexuesus Wats	Do.	....	Sukkunaripullu	....
326	Cynancum panciflorum R. Br.	Asclepiadaceae	H.C.	....	....
327	Cynodon larberi Rang and Tad	Gramineae	....	....	....
328	Cynodon dactylon Pers	Do.	....	Arugam-pullu	....
329	Cyperus arenarius Retz	Cyperaceae	H	....	....
	Cyperus aristatus Rottb (See C. squarrosus Linn)	Do.	H	....	....
330	Cyperus articulatus Linn	Do.	H	....	....
331	Cyperus bulbosus Vahl	Do.	H	....	....
332	Cyperus castauons Willd	Do.	H	....	....
333	Cyperus cephalotes Vahl	Do.	H	....	....

Serial number and Name of the plant. (1)	*Family.* (2)	*Habit.* (3)	*Tamil Name.* (4)	*Importance.* (5)
334 Cyperus compressus Linn	Cyperaceae	H	Kunna -korai	....
335 Cyperus corymbosus Rottb	Do.	H	Pangorai	mat.
336 Cyperus distans Linn-f	Do.	H	....	....
337 Cyperus eleusinoides Kunth	Do.	H	....	....
338 Cyperus exaltatus Retz	Do.	H	Pattupai korai	mat.
339 Cyperus haspan Linn	Do.	H	....	....
340 Cyperus imbricatus Retz	Do.	H	....	....
341 Cyperus iria Linn	Do.	H	....	....
342 Cyperus kyllingia Endl. (Syn. Kyllinga monocephala Rottb).	Do.	H	....	....
343 Cyperus nutans Vahl	Do.	H	....	....
344 Cyperus pangorei Rottb.	Do.	H	Pangorai	mat.
345 Cyperus rotundus Linn	Do.	H	Korai	....
346 Cyperus platyphyllus Roem & Sch	Do.	H	....	....
347 Cyperus procerus Rottb	Do.	H	....	....
348 Cyperus squarrosus Linn (Syn. Cyperus aristatus Rottb).		..	....	....
349 Cyperus stoloniferus Retz	Do.	H	....	....
350 Cyperus teneriffae Poir	Do.	H	....	....
351 Cyperus tennispica Stend	Do.	H	....	....
352 Cyperus tricops Endl. (Syn. Kyllinga tricops Rottb)		..	....	....
353 Dactyloctenium aogyptium Beanv	Gramineae	H	....	f
354 Dalbergia paniculata Roxb	Leguminosae (Pap)	T	Panni-vagai	....
355 Dalbergia sissoo Roxb	Do.	T (Cult)	Sohusa	t, f
356 Dalbergia spinosa Roxb	Do.	C. Sh	....	....
357 Dalbergia metel Linn (Syn. Dalbergia fastnosa Linn)	Solanaceae	H	Oomathai	Poisonous.

358	Delonix elata Gamble	Leguminosea	T (Cult)	Vadanarayanan	Manure leaf.
359	Delonix regia Raf	Do.	Do.	Mayil-konnai	o
360	Dendroeclamus strictus Nees	Graminene		Kal-moongil	Bamboo.
361	Dentella repens Forst	Rubiaceae	H	....	....
362	Dendrophthoe falcata Etting	Loranthaceae	P	Pulluruvi	....
363	Derris scandens Benth	Leguminosae (Pap)	C. Sh	Tekil	m
364	Derris trifoliata Lour (Syn. D. uliginosa Benth)	Do.	C. Sh	....	m
365	Desmodium biarticulatum Benth	Do.	Sh	....	....
366	Desmodium pulchellum Benth	Do.	Sh	....	....
367	Desmodium triflorum DC	Do.	H	....	....
368	Dichanthium annulatum Stapf	Gramineae	H	....	f
369	Dichantium caricosum A Camus	Do.	H	....	f
370	Dichrostachys cinerea W. & A.	Leguminosea ((Mim)	ST	Vidatharai Vadathala	....
371	Dichoma tomentosa Cass	Compasitae	U. Sh	....	....
372	Digera alternifolia (L) Aschers (Syn. Digera arvensis Forsk).	Amarantaceae	H	....	Weed.
373	Digitaria longiflora Pers	Gramineae	H	....	....
374	Digitaria marginata Link	Do.	H	Arisi-pullu	f
375	Digitaria pedicellaris Pr	Do.	H	....	....
376	Dinebra retrofloxa Panz	Do.	H	....	
377	Dioscorea alata Linn	Dioscoreaceae	C	Siru-valli Vettilaivalli	tubers edible.
378	Dioscorea bulbifora Linn	Do.	C	Kodikilangu	tubors bulbils.
379	Dioscorea esculenta Bark	Do.	C	Siru-valli	Do.
380	Dioscorea hispida Dermst	Do.	C	Pey-pirandai	m
381	Dioosorea oppositifolia Linn	Do.	C	Kavali	m
382	Dioscorea pentapyhlla Linn	Do.	C	Nalvelikilangu Savalakilangu Vallai-kodi	....

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383 Diospyros choloroxylon Roxb	Ebenaceae	Sh	Karu-vakkanai	fr.
384 Dioscorea tomentosa Heyne	Dioscreaceae	G	Nalvelikilangu Savala-kilangu	....
385 Diospyros cordifolia Roxb	Ebenaceae	T	....	....
386 Diospyros ebenum Koen	Do.	T	Karungali	t, m
387 Diospyros melanoxylon	Do.	T	Karun-thumbai	fr, fw
388 Diospyros montana Roxb	Do.	T	Vakkanai	t, m
389 Dipteracanthus patulus (Jacq.) Nees	Acanthaceae	U. Sh	....	....
390 Dipteracanthus Prostratus (Peir) Nees	Do.	U. Sh	....	....
391 Dodonaea viscosa Linn	Sapindaceae	Sh	Virali	....
392 Dolichandrone falcata Seem	Bignoniaceae	T	Kattu-varsana	....
393 Doliches ciliatus Kl	Leguminoseae	C	....	....
394 Doliches biflorus Linn	Do. (Pap)	C	Kollu	....
395 Doliches falcatus Kl	Do.	C	....	....
396 Doliches lablab Linn	Do.	C	Avarai	Veg.
397 Dopatrium lobelioides Benth	Scrophulariaceae	H	....	....
398 Dopatrium nudicaule-B. Ham	Do.	H	....	....
399 Dregea golubilis (L.f) Benth ex Hk. f. (Syn. Marsdenia volubilis, Linn f.)	Ascelepiadacéa	C. Sh	Kurinja	fe, floss.
400 Drosera burmanni Vahl	Droseraceae	H Insectivorous in marshes.	....	....
401 Drosera indica Linn	Do.	Do.	....	....
402 Drypetes sepiaria (W & A) Pax and Hoffman	Euphorbiaceae	Sh	Virai	....
403 Duranta repens Linn (Syn. D plumieri Jacq)	Verbenaceae	Sh (cult)	..	o
404 Ecbolium viride Alston (Syn. Ecbolium linnoanum (kur z).	Acanthaceae	Sh	....	....
405 Echinochloa crus-galli Beauv	Gramineae	H	....	f

406	**Echinochloa stagnina Beanv**	Do.	H	....	....
407	Echinops ochinatus DC	Compositea	H	....	m
408	Eclipta prostrata (L.) Linn (Syn. Eclipta alba Hassk)	Do.	H	Karisalankanni	m
	Ehretia microphyalla Lam *See* Carmona microphylla (Lank) Don.	Boraginaceae	Sh	....	....
409	Eichhornia crassipes Solms	Pontederiaceaae	H (εq)	Neithaomarai	
410	Elaeodenraon glaucum **Pers.**	Celastraceae.	T	Irkuli, Karuvali Selappamaram.	t,o,m
411	Eleiotis monophylla (Burm. f.) DC	Leguminosae (Pap)	H	....	....
412	Eleocharis artopurpurea Kunth	Cyperaceae	H	....	....
413	Eleocharis capitata R.Br.	Do.	H	....	....
414	Eleocharis plantaginea R. Br.	Do.	H	....	....
415	Eleocharis spiralis R. Br	Do.	H	....	....
416	Elephantopus scaber Linn	Compositae	H	Anashovadi	m
	Eleusine aegyptiaca Desp (*See* Dactyloctenium aegyptium Beanv.)	Gramineae		....	....
417	Eleusine Coracana gaertn	Do.	G (Cult)	Kezhvaragu Ragi	**Cereal.** ....
418	Eleusine indica Gaertn	Do.	R	....	....
419	Eleusine lagopoides Merr	Do.	H	....	....
420	Eleusine verticillata Roxb	Do.	H	....	..
421	Elytraria acaulis Lind	Avanthaceae	H	....	....
422	Elytrophorus spicatus A Cam	Gramineae	H	Vayal-thenai	....
423	Emblica officinalis Gaertn	Euphorbiaceae	T	Nelli	fr, m
424	Emilia sonchifolia DC	Compositae	H	....	....
425	Enneapogan elegans Stapf	Gramineae	H	....	....
426	Enicostemma veticillatum-(L) Engl (Syn. Enicostemma littorale Bl)	Gentianaceae	H	Vellarugu	m
	Enterolobium saman Prain ex King [See Samanea saman (Jacq). Merr]	**Leguminosae**	T	Toongumoonji	o

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427 Epaltes divaricata cass	Compositae	H	....	....
428 Epaltes pygmaea DC	Do.	H	....	....
429 Eragrostis aspera Nees	Gramineae	H	....	....
430 Eragrostis bifaria W	Do.	H	....	....
431 Eragrostis branchyphylla Stapf	Do.	H	....	....
432 Eragrostis cilianensis Link	Do.	H	....	....
433 Eragrostis ciliaris Link	Do.	H	....	....
434 Eragrostis coarctata Stapf	Do.	H	....	....
435 Eragrostis diarrhena Stend	Do.	H	Kanjara-pullu	....
436 Eragrostis gangetica Stend	Do.	H	....	
437 Eragrostis pilosa Beauly	Do.	H	....	....
438 Eragrostis plumosa Link	Do.	H	....	....
439 Eragrostis poaeoides Bealy	Do.		....	....
440 Eragrostis riparia Nees	Do.	H	....	....
441 Etagrosits unioloides Nees	Do.	H	....	....
442 Eragrostis viscosa Trin	Do.	H	....	....
443 Eragrostis willdenoviana Ness	Do.	H	....	....
444 Eremochloa muricata Hack	Do.	H	....	....
445 Eremopogan foveolatus Stapf	Do.	H	....	....
446 Erianthus arundinaceus Jesweit	Do.	H	Pey Karumbu	....
447 Erigeronasteroides Roxb	Compositae	H	..	....
448 Eriocaulon quinquangulare Linn	Eriocaulaceae	H (Marsh)	....	....
449 Eriocaulon sieboldianum S & Z	Do.	Do.	....	....

450	Eriochloa procera C.E. Hubb	Graminaca	H	....	
	Eriodendron pentandrum Kurz [*See* Ceiba pentandra (Linn) Gaertn].				
451	Eravatamia coronaria Stapf	Apocynaceae	Sh	Nandiyavattam	0, m
452	Erythraea roxburghi G. Don	Gentianaceae	H	....	....
453	Erythrina variegata Linn (Syn. Erythrina indica Lam)	Leguminosae (Pap)	T	Kalyana-murungai.	....
454	Erythroxylon monogynum Roxb	Linaceae	St	Devadaru, Sembulichan	....
455	Eucalyptus tereticornis Sm	Myrtaceae	T	Thaila-maram	fw
	(Eugenia *See* Syzigium)				
456	Eulophia epidendraea C Fisch	Orchidaceae	H opiphyte	..	O
457	Euphorbia antiquorum Hhyne	Euphorbiaceae	ST	Sandura kalli	....
458	Euphorbia bomaiensis Santapau (Syn. E. microphylla Heyne).	Do.	H	Sinna-amman pacharisi	m
459	Euphorbia corrigioloides Boiss	Do.	H	....	....
460	Euphorbia heterophylla Linn	Do.	H	....	....
461	Euphorbia hirta Linn	Do.	H	Amman-pacharisi	m
462	Euphorbia hypericifolia Linn	Do.	H	....	....
463	Euphorbia milii Ch. des Moulins (Syn. E. splendens Boj)	Do.	Sh (Cult)	....	O
464	Euphorbia prostrata Ait	Do.	H	....	..
465	Euphoribia rosea Retz	Do.	H	....	....
466	Euphorbia thymifolia Linn	Do.	H	Sitrappaladai	m
467	Euphorbia tirucalli Linn	Do.	ST	Tiru-kalli	....
468	Evolvulus alsinoides Linn	Convolvulaceae	H	Vishnu-krandi	m
469	Exacum pedunculatum Linn	Gentianaceae	H	....	....
470	Excoecaria agallocha Linn	Euphorbiaceae	T	Tillai	m
471	Feronia limonia (L) Swingle (Syn. Feronia elephantum Corr.)	Rutaceae	T	Vila	fr
472	Ficus benghalensis Linn	Moraceae	T	Ala-maram	o, m
473	Ficus gibbosa Bl	Do.	T	Kalithi	....
474	Ficus hispida Linn	Do.	ST	Pey-athi	m

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475 Ficus lucescens Blume (Syn. F. infectoria Roxb)	Moraceae	T (cult)	Malai-ichi	....
476 Ficus religiosa Linn	Do.	T	Arasu	o. m
477 Ficus retusa Linn	Do.	T	Kal-ichi	m
478 Ficus tjakela Burm	Do.	T	....	....
479 Fimbristylis bis-umbellata Dub	Cyperaceae	H	Kadu-korai	....
480 Fimbristylis complanta Link	Do.	H	....	....
481 Fimbristylis compressa Boeck	Do.	H	....	....
482 Fimbristylis dichotoma Vahl	Do.	H	....	....
483 Fimbristylis ferruginea Vahl	Do.	H	....	....
484 Fimbristylis miliacea Vahli	Do.	H	....	....
Fimbristylis monostachya Hack (*See* Abildgardia monostachya (L) Vahl.	Do.	H	....	....
485 Fimbristylis polytrichoides R. Br.	Do.	H	....	....
486 Fimbristylis spathacea Roth	Do.	H	....	....
487 Flacourtia indica Merr	Bixaceae	Sh	Kattukalli	m
488 Flaveria australasica Hook	Compositae	H	....	....
489 Fluggea (*See* Securinega)	....	..	....	....
490 Fuirena glomerata Lam	Cyperaceae	H	..	....
491 Fuirena uncinata Kunth	Do.	H	....	....
492 Gardenia gummifera Linn f	Rubiaceae	ST	Tikkamalli Kambili-pisin	m
493 Gardenia jasminoides Ellis	Do.	Sh (Cult)	....	o
494 Gardenia latifolia Ait	Do.	ST	Kumbai	st
495 Gardenia resinifera Roth	Do.	ST	Kumbi	m
496 Gardenia turgida Roxb	Do.	Sh	....	....
497 Garnotia scoparia stapf	Gramineae	H	....	....

498 Geniosporum tenuiflorum (L) Merr. (Syn. G. prostratum Benth.).	Labiatae	H	....	....
499 Geodorum densiflorum Schlecht	Orchidaceae	H	....	....
500 Gisekia pharnaceoides Linn	Aizoaceae	H	Manali-keerai	m
501 Givotia rottleriformis Griff	Euphorbiaceae	T	Vendalai, Sendanakku	Toy, oilseed.
502 Glinus oppositifolia (L) A.Do.	Aizoaceae	H	....	....
503 Gloriosa superba Linn	Liliaceae	Ch	Kandal, Kalappaikizhangu	o m
504 Glossostigma spathalatum Arn	Scrophulariaceae	H	....	....
505 Glycosmis cochinchinensis Pierre	Rutaceae	Sh	Konji	fr, m
506 Gmelina asiatica Linn	Verbenaceae	Sh	Kumil	....
507 Gnaphalium indicum DC	Compositae	H	....	....
508 Gomphrena decumbens Jacq.	Amarantaceae	H	....	....
509 Gomphrena globosa Linn	Do.	H (Cult)	Vada-malli	o
510 Grangea maderaspatnana Poir	Compositae	H	Masipatri	m
511 Graptophyllum hortense Nees	Acanthaceae	Sh (Cult)	....	o
512 Grewia aspera Roxb	Tiliaceae	Sh	....	....
513 Grewia disperma Rottl	Do.	ST	....	....
514 Greawia hirsuta Vahl	Do.	U. Sh.	....	m
515 Grewia glabra Bl(Syn.G.disperma Rottl)	....	..	....	....
516 Growia obtusa Wall	Tiliaceae	Sh	....	....
517 Grewia orientalis Linn	Do.	Sh	Antikullai	....
518 Growla rotvndifolia Juss	Do.	ST	....	....
519 Grewia tenax (Foral) Flori (Syn. G. betulaefolia Juse)	Do.	Sh	....	fr
520 Grewia tiliaefolia Vahl	Do.	T	Tadasu	t, o, m
521 Grewia villosa Willd	Do.	Sh	Kullai	....
522 Guazuna tomentosa Kunth	Sterculiaceae	ST (Cult)	Tenpoochi-kai	o
523 Guettarda speciosa Linn	Rubiaceae	T (Cult)	Panneer	o

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524 Gymnema elegans W. & A.	Asclepiadacene	C	....	....
525 Gymnema sylvestre R.B.	Do.	C	....	....
526 Gymnosporia emarginata Laws	Celastraceae	Sh	....	....
527 Gymnosporia spinosa Flori	Do.	ST	....	....
Gynanorpsis pentaphylla DC (*See* Cleome gynandra Linn)	Capparidaceae	H	Velai	m
528 Gyrocarpus jacquini Roxb	Hernandicaeae	T	Tanakku, Teppa-maram	Softwood.
529 Habenaria plantaginea Lindl	Orchidaceae	H	....	....
530 Habenaria platyphylla Spr	Do.	H	....	....
531 Habenaria viridiflora R.Br.	Do.	H	....	....
532 Hackelochloa granularis O. Ktz	Gramineae	H	....	f
533 Halophila balfouri Solered	Hydrocharitaceae	H (aq) (Coastal)	....	....
534 Halophila ovalis Hk f	Do.	Do.	....	....
535 Halophila ovata Gaud	Do.	Do.	....	....
536 Hardwickia binata Roxb	Leguminosae (Caes)	T	Acha	t
537 Helicanthus elasticus (Desr) Danser	Loranthaceae	Sh (parasite)	....	....
538 Helicteres isora Linn	Sterculiaceae	Sh	Kaiva, Valambiri	fe
539 Heliotropium brevifolium Wall	Boranginaceae	U.Sh	....	....
540 Heliotropium curassavicum Linn	Do.	H	....	....
541 Heliotropium indicum Linn	Do.	H	Telkodukku	m
542 Heliotropium ovalifolium Forsk	Do.	H	....	....
543 Heliotropium scabrum Retz	Do.	H	....	....
544 Heliotropium subulatum Rochst	Do.	U. Sh	....	....
545 Heliotropium supinum Linn	Do.	H	....	....

546	Heliotropium zeylanicum Lam Hemicyelia seplaria W. & A. See Drypotes seplaria (W. &. A.) Pax and Hoff.	Boranginaceae	H	....		
547	Hemidesmus indicus R.S.	Asclepiadaceae	Sh	Nannari	m	
548	Hemigraphis latebrosa Nees	Acanthaceae	U.Sh	....		
549	Herpestis monniera (Linn) H.B. & K.	Scrophulariaceae	H (aq)	Neerbrabmi	m	
550	Hesperethusa crenulata (Rox) Boem	Rutaceae	T	....		....
551	Heteropogon contetus Beanv	Gramineae	H	Oosi-pullu, Pani-pullu	f	
552	Heylandia latebrosa DC	Leguminosae (PaP)	H	....		....
553	Hibiscus canescens Heyne	Malvaceae	H	....		....
554	Hibiscus canabinus Linn	Do.	H (Cult)	Pulicha	fe, veg.	
	Hibiscus esculentus Linn See Abolmoschus esculentus (L) Moench	Do.	Do.	Vendai	Veg.	
	Hibiscus ficulneous Linn See Abelosnchus ficulnous (L) W & A.	Do.	H	....		....
555	Hibiscus micranthus Linn f	Malvaceae	H	....		
556	Hibiscus rosa-sinensis Linn	Do.	Sh (Cult)	Semba-attai	o	
557	Hibiscus tiliacous Linn	Do.	E	Aathu-poovarasu	o	
558	Hibiscus vitifolius Linn	Do.	H	....		....
	Hippocratea indica Willd	Hippocrateaceae	C. Sh	....		....
	See Pristimera indica (Willd.) A.C. Smith Hippocratea obtusifolia Roxb. See Locsneriella obtusitolia (Roxb.) A.C. Smith	Do.	Do.	....		....
559	Hiptage benghalensis Kurz (Syn. Hiptage madablota Gaertn.)	Melpighimceae	Do.	Kurundai, Adarkanji, Adigam.	o,m	
560	Holarrhena antidysenterica Wall	Apocynaceae	ST	Kudanappalli Veppalai.	m	
561	Holoptelea integrifolia Pl	Ulmaceae	T	Aya, Ayil, Tapasi	m	
562	Holostemma annulare K. Schum	Asclepiadaceae	C	....		
563	Hugonia mystax Linn	Linaceae	C. Sh	Modirakanni	m	

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(1)	(2)	(3)	(4)	(5)
564 Hybanthus enneaspermus (L) F. V. Muell	Violaceae	H	Orilai-thamari	m
565 Hydrilla verticillata Royle	Hydrocharitaceae	H (aq)	....	....
566 Hydrolea zeylanica Vahl	Hydrophyllaceae	Do.	....	....
567 Hydrophnlax maritima Linn. f	Rubiaceae	H	....	..
568 Hygrophila auriculata (Schumach) Haine	Acanthacea	H (aq)	Neer-mulli	—
569 Hygrorhiza aristata Nees	Gramineae	H	Valli-pullu	— f
570 Hymenachne peoude-interrupta C. Muell	Do.	H	....	....
571 Hyptis suaveolens Poit	Labiatae	H	....	
572 Ichnocarpus fruteacens N.Br.	Apooynaceae	C	Oodal-kodi.	
Ilysanthus hyssopicides Benth	Scrophulariaceae	H	....	....
See Lindernia hyssopioides (L) Haines				
573 Ilysanthus oppositifolia urb	Do.	H	....	....
Ilysanthus parviflora Benth See Lindernia parviflora (Roxb.) Haines.	Do.	H	....	....
574 Ilysanthus serrata Urb	Do.	H	....	....
575 Ilysanthus veronicaefolia Urb	Do.	H	....	....
576 Impatiens balsamiua Linn	..	H (Cult & Wild)	....	....
577 Imperata cylindrica Beauv	Gramineae	H	....	....
578 Indigofera aspalathoides Vahl	Leguminosae (Pap)	U. Sh	Sivanar Vembu	m
579 Indigofera collutea (Burm f) Merr	Do.	Sh	....	....
(Syn. I. viscosa Lamk)				
580 Indigofera onneaphylla Linn	Do.	H	Seppuneringi.	....
581 Indigofera hirsuta Linn	Do.	H	....	....
582 Indigofera linifolia Retz	Do.	H	....	....
583 Indigofera tinctoria Linn	Do.	U. Sh	....	....

584 **Indigofera trita Linn**	Do.	..	....		....
Inga-See Pithecellobium	Violaceae	H	Orileithamarai	m	....
Ionidium suffruticosum Ging	Do.	H	....		
See Hybanthus enneaspermus (L) F. V. Muck	Do.	H	....		
585 Iphiginia indica Kunth	Liliaceae	H	Neer-panai.		....
586 Ipomoea aquatica Forsk	Convolvulaceae	(H aq)	Vallaikeerai	Veg.	
587 Ipomoea hederaceia Jacq	Do.	C	....		....
588 Ipom-oea hederifolia Linn (Syn. Quamoclit phoenica choisy).	Do.	C	....		....
589 Ipomoea hispida R. & S.	Do.	C	....		....
590 Ipomoea fistulosa Mart ex. choisy (Syn. I. carnea Jacq).	Do.	C	....		....
591 Ipomoea maxima (L.F.) Donex Sweet (Syn. I. Sepiaria Koen).	Do.	H	....		....
592 Ipomoea obscura K. Gawl	Do.	H	....		....
593 Ipomoea pes-caprae Sweet	Do.	Creeper	....	m	
594 Ipomoea pesrtigridis Linn	Do.	C	....		....
595 Iopmoea quamoclit Linn	Do.	C	....		....
596 Ipomoea staphylina R. & S.	Do.	C.Sh	Onangodi		....
597 Isachne dispar Trin	Gramineae	H	....	f	
598 Ischaenum aristatum Linn	Do.	H	....	f	
599 Ischaemum rugosum Salisb	Do.	H	Kadukkonpullu		....
600 Iseilema laxum Hack	Do.	H	Tenganaripully	f	
601 Iseilema prostratum Anderss	Do.	H	....		....
602 Ixora arborea Roxb. Ex-Sm (Syn. I. parviflora Vahil).	Rubiaceae	Sh	Korivi, Sholundu, koran		....
603 **Ixora coccinea Linn**	Do.	Sh (Cult)	Thetti, Vetchi	o	
604 **Ixora finlaysoniana Wall ex. G. Don**	Do.	Do.	....	o	

Serial number and name of the Plant. (1)	Family. (2)	Habit. (3)	Tamil name. (4)	Importance. (5)
605 **Jacquemontia caerulea Choisy**	Convolvulaceae	C (Cult)	....	●
606 **Jacquemontia pianculata Hall f.**	Do.	C	....	o
607 **Jasminum angustifolium Vahl**	Oleaceae	C Sh.	Kattumalligai	m
608 Jasminum auriculatum Vahl	Do.	Do.	Mullai, Oosi-malligai	o
609 Jasminum rigidum Zenk	Do.	Sh	Oosi-malligai	....
610 Jasminum samback Ait	Do.	C Sh. (Cult)	Koda-mullai, Perumalligai	o
611 Jasminum sessiliflorum Vahl	Do.	C	....	....
612 Jatropha curcas Linn	Euphorbiaceae	Sh. (Cult)	Kattamanakku	m hedges
613 **Jatropha glandulifera Roxb**	Do.	Sh.	....	
614 **Jatropha gossypifolia Linn**	Do.	Sh	....	....
615 **Jatropha heterophylla Heyne**	Do.	Sh	....	....
616 **Jatropha multifide Linn**	Do.	Sh	Coral Plant	o
617 Juncellus laevigatus Cl	Cyperaceae	H	....	....
618 Juncellus pygmaeus Cl	Do.	H	....	....
619 Jusaieua perennis (L) Brenan (Syn. Ludwigia parviflora Roxb)	Onagraceae	H	....	....
620 **Jussieua suffruticosa Linn**	Do.	U.Sh. (aq.)	Neerakrambu Kattu-krambu. Kramburpoondu.	m.
621 Jusieua villosa Lam	Do.	H.	Do.	
622 Justicia diffusa Willd	Acanthaceae	H.	....	....
623 Justicia gendarussa Linn f.	Do.	U.Sh.	Karurnochi	m.
624 Justicia glauca pottl	Do.	H.	....	....
625 Justica prostrata Gam	Do.	H.	....	....
626 Justicia salsoloides T. And	Do.	U.Sh.	....	....
627 Justicia tranquebariensis Linn f.	Do.	U.Sh.	....	....

628	Kigelia pinata DC	Bignoniaceae	T (Cult)	Sivangundalam	O.
629	Kiiganalia reticulata Baill	Eupho-biaceae	Sh.	Pools	
	Kyllingamonocephala Rottb	Cyperaceae	H		m.
	See Cyperus monocophala	Do.	H		
	Kyllinga-triceps Rottb				
	See Cyperus triceps.				
630	Lactuca runcinata DC	Compositae	H		
	Lagarosiphon alternifolia D	Hydrocharitaceae	H (aq)		
	See Nechamandra alternifolia (Roxb) Thw.				
631	Loosneriella obtusifolia (Roxb) A.C. Smith	Hippocratea ceae	C.Sh.		
632	Lagenaria leucantha (Duch) Spushby (Syn. Lagenaria Vulgaris Ser).	Cucurbitacea	C. (Cult)	Surai.	Veg.
633	Laggera aurtia Sch. Bip	Compositae	H		
634	Lannea coromandelica Merr	Anacardiaceae	T	Odi	
635	Lantana camara L. Varaculeata (Linn) Moldenke	Verbenaceae	Sh.		o, weed.
636	Lantana crenulata Otto & Diet	Do.	Sh.		
637	Lantana indica Roxb	Do.	Sh.		
638	Lantana wightiana Wall	Do.	Sh.		
639	Launaea sarmentosa (Willd) Alston (Syn. Launaea pinnatifida cass)				
640	Lawsonia inermis Linn	Lythraceae	Sh.	Maruthouri	m, headge
641	Leersia hexanrda Sw	Gramineae	H		o
642	Lemna gibba Linn	Lemnaceae	H (aq.)		
643	Lemna polyrhiza Linn	Do.	Do.		
644	Leonotis nepataefolia P.Br.	Labiatae	H		m.
645	Lepidagathis cristata Willd	Acanthaceae	U.Sh.		m.
646	Lepidagathis incurva D. Don (Syn. L.hyalina Nees)	Do.	H		
647	Lepisanthes tetraphylla Radlk	Sapindaceae	T.	ekota	
648	Leptadenia reticulata W &A	Asclepiadaceae	C.Sh.		m, fo.

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649 Leptochloa chinensis Nees	Gramineae	H	....	f
650 Leptochloa polystachya Benth	Gramineae	H	....	f.
651 Leucaena leuoccephala (Lamk.) de wit (Syn. Leucaena glauca Benth).	Leguminosa (Pap)	T	Savandai	f. manure
652 Leucas aspera Spr.	Labiatae	H	....	m ....
653 Leucas biflora R.Br	Do.	H	....	-
654 Leucas cephalotes Spr.	Do.	H	....	m
655 Leucas urticaefolia B.Br.	Do.	H	....	....
656 Leucas wightiana Benth	Do.	H	....	....
Limnanthemum cristatum Gris see Nymphoides cristatum (Roxb) O. Kuntze.	Gentianaceae	H (aq)	....	....
Limnanthemum indicum Thw. see Nymphoides indicum (L) O. Kuntze.	Do.	Do.	....	....
657 Limnophila aquatica (Willd) Santapau (Syn. Limnophila polystachya Beth).	Scropulariaceae	H (aq.)	....	....
658 Limnophila indica (L) Druce (Syn. L.racemosa Benth	Do.	Do.	....	....
Limnophila gratioloides R.Br.	Do.	Do.	....	....
659 Limnophyton obtusifolium Miq	Alismaceae	Do.	....	....
Limonia alata W &A See Eleiospermium alatum (W& A) Swingle				
Limonia crenulata Roxb. see Hosperethusa Crenulata (Roxb) Roem.				
660 Lindernia crustacea (L) F.V. Mueller	Scrophulariaceae	H	....	....
661 Lindernia hyssopioides (L) Haines	Do.	H	....	....
662 Lindernia parviflora (Roxb) Haines	Do.	H	....	....
663 Lippia nodiflora A.Rich see Phyla nodiflora (L) Greene	....	..	....	....
664 Lipocarpha triceps Nees	Cyperaceae	H	....	....
665 Lochnera see Vinca	....	..	....	....
Loranthus bractetaus Heyne see Taxillus heynanus Schult) Danser	Loranthaceae	Sh (Parasite)	....	....

	Loranthus elasticus Desv. *see* **Helicanthus elastica** (Desv.) Danser.	**Loranth**aceae	Sh (Parasite)	....		....
	Loranthus longiflorus Desv. *see* Dendrophothoe falcata Etting.	Do.	Do.	....		....
	Ludwigia parviflora Roxb. **see Jussiaea**	Onagraceae	H	....		....
666	**Luffa acutangula Roxb**	Cucurbitaceae	..	....	**m.**	
667	**Luffa** aegyptiaca Mill	Do.	C	....	m, **Veg.**	
668	Lycopersicum esculentum Mill	Solanaceae	H	Thakkali	**m, Vg.**	
669	Maha buxifolia Pers.	Ebenaceae	Sh.	Irumbuli	t	
670	Madhuca longiflia (Linn) **Machride**	Sapotaceae	T (**Cult**).	Illuppai	f, t	
671	Malvastrum eo-romandelianum **Carcke**	Malvaceae	Sh.	....		
672	Mallotus philipinensis Muell **Arg.**	Euphor-biaceae	T	Kamala, **Kapli**	m, **dye**	
673	Mangifera indica Linn	**Anacardiaceae**	T	Ma	**fr, t,** m	
674	**Manihot esculenta Crantz (Syn. M.utilissima Pohl)**	**Euphorbiaceae**	Sh (cult)	Mara-valli	**tubers**	
675	**Manilkara achras (Mil) Fosberg**	Sapotaceae	T	Sapota	o, f.	
676	**Manilkara hexandra Dub**	Do.	S.T	ST		....
677	Manisuris myurus linn	**Gramineae**	..	**Wartisirapullu.**		....
678	**Mariscus bulbosus Cl.**	Cyperaceae	H	....		....
679	**Mariscus cyperinua Vahl**	Do.	H	....		....
680	**Mariscus dubius Kuk**	Do.	H	....		....
681	Mariscus pennatus **Dom**	Do.	H	....		....
682	Mariscus squarrosus Cl	Do.	H	....		....
	Marsdonia volubilis T. Cooke *see* **Dregia volubilis (L.f.)** Benth ex. Hook. f.	Ascelopiadaceae	C.Sh.	Kurinja	**fe, floss.**	
683	Martynia annua Linn	Pedaliaceae	H	**Telkodukkukai**	**m**	....
684	Melanthesa rhamnoide (petz) Bl.	Euphorbiaceae	Sh.	Mani-pulnathi, **Singappu-pupla.**		....
685	Melanthesa tur-binata (Koenex-**Poxb) Oken**	Do.	Sh.			....
686	**Melia azedarch Linn**	Meliaceae	T	**Malai-Vembu**	**o, m**	
687	**Mellilotus indica All**	**Leuguminosae (Pap)**	H	....	**Weed**	

	(1)	(2)	(3)	(4)	
688	Melochiacorchorifolia Linn	Sterculiaceae	Sh.	..	..
689	Melothria maderaspatana Cogn.	Cucurbitaceae	C	..	m
690	Memoxylon umbellatum Burm (Syn. Memecylon edule (Roxb)	Melastomaceae	Sh.	Kaya	..
691	Memecylon umbellatum Burm.f.	Do.	Do.	Do.	....
692	Mentha arvensis Linn	Labiatae	H (Cult)	Podina	m, Condiment
693	Merremia ch-ysoides Hall. f	Convelvulaceae	CH	..	..
694	Merrenia dissecta Hall . f.	Do.	Do.	C	....
695	Merrrenia ganglica (L) eufo dont (Syn. M. emarginata Hall. f.)	Do.	H	H	..
696	Merremia hastata Hall ,f.	Do.	H	..	....
697	Merrenia tridentataHall. f.	Do.	H	....	....
698	Merrenia vitifolia Hall f.	Do.	H	....	....
699	Micrococca mercurialis Benth	Euphorbiaceae	H	....	weed
700	Millingtonia hortenis Linn .f.	Bignoniaceae	T (Cult)	Maramalligai	o
701	Mimosa pudica (Linn)	Leguminosae (Mim)	H	Tottasurungi	m
702	Mimosa rubicaulis Lamk	Do.	C.Sh.	....	m
703	Mimusopselengi Linn	Spotaceae	T	Mahadam.	o
	Mimusops hexandra Roxb.				
	See Manilkara hexandra Dub	Do.	T	Palai	fr, m.
704	Mirabilis jalapa Linn	Nyctaginaceae	H (o)	Andhi-mandarai	o, m.
705	Mitragyna parviflora Korth	Rubiaceae	T	Chinnakadambu	t
706	Mnesithea laevis Kunth	Granaineae	H	....	f
707	Mollugo corviana Ser	Aizoaceae	H	....	..
708	Mollugo disticha Ser.	Do.	H	....	..
709	Mollugo nudicaulis Lam.	Do.	H	....	..
	Mollugo oppositifolia (Linn) *See* Glinus oppositifolia (L) A.De.	Do.	H	Kachantarai	

710	Mollugo pentaphylla Linn	Do.	H	....	m
711	Memordica charantia Linn	Cucucbrtaceae	H	Pahal	Veg.
712	Memordica dioica Roxb	Do.	H	Puluppakkai	m
713	Momordica tuberosa Cogn.	Do.	H	....	m ....
714	Monochria hastaefolia Presl	Pontederiace e	H	....	....
715	Monochoria vaginalis Presl	Do.	H	....	....
716	Morinda tintoria Roxb	Rubiacead	T	Nuna	
717	Moirnga concanensis Nimmo	Moringaceae	T	Kattumurugai	....
718	Moringa leifera Lam	Do.	T (Cult)	Murungai	Veg.
719	Morus alba Linn	Moraceae	Sh.	Kambali	f. m
720	Moschosma polystachyum Benth	Labiatae	H	Sanakkipoondu	m
721	Murdannia dimorpha (Dals) Bruckn	Commelinaceae	H	....	....
722	Murtdannia malabarica (L) Bruackner	Do,	H	....	....
723	Murdannia nudiflorum Brenan	Do.	H	....	....
724	Murdannia vaginatum (L) Bruckn.	Do.	H	....	....
725	Murraya koenigii Sprong	Rutaceae	ST	Karuveppilai	m
726	Murrays paniculata Jack	Do.	ST	Seemai-konji	m
727	Musa pardisiaca Linn	Mussaceae	T (Cult)	Vazhai	f., Veg. m.
728	Myriophyllum in-indicum Willd	Halorrhagidaceae	H (aq.)	....	....
729	Nijas falsiculata A. Braun	Najadaceae	Do.	....	....
730	Nijas indica Cham	Do.	Do.	....	....
731	Nijas lacerata Rendle	Do.	Do.	—	....
732	Nechamandra alternifoila (Roxb.) Thw.	Hydrocharitaceae	Do.	....	....
733	Nelumbo nucifora Garetn (Syn. Nelumbium speciosum, (Willd).	Nymphaeaceae	Do.	Tamarai	o,m
734	Neptunia cleraopa Lou	Neguminosea (Mim.)	Do.	Netti	....
735	Nerium indicum Mill. (Syn. N. odorum Soland)	Apocynaceae	Sh.	Arali.	e,m
736	Neootiana tabacum Linn	Solananceae	H (Cult).	Pugaiyilai	m

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737 Nothopanax fruticosum Mi	Araliaceae	Sh. (Cult)	....	
738 Nothosae-va brachiata Wt	Amarantaceae	H	....	....
739 Nyctanthes arbortristis Linn	Cleaceace	Sh.	Pavalamalligai	o. m
740 Nymp' aeamouchali Burn f. (Syn. Nymphaea pubescenes Willd).	Nymphaeaceae	H (aq.)	Alli.	o. m
741 Nymhoides cristatum (Roxb) O. Kuntze	Gentianaceae	Do.	....	....
742 Nymphoides indicum (L) O. Kuntze	Do.	Do.	....	....
743 Ochna squaosa Linn	Ochanaceae	ST	Silanthi	m
744 Ochmum adscendens Willd	Labiatae	H	....	....
745 Ocimum amoricanum Linn	Do.	H	Kanjankorai	m ....
746 Ocimum gratissimum Linn	Do.	Sh	Elumichanthulasi	m ....
747 Ocimum sanctum Linn	Do.	U. sh	Tulasi	m ....
Odina wodier Roxb. See Lannaea c romandelica Merr.				
748 Olax scandens Roxb	Olacaceae	Sh.	Kadalranchi	
749 Olax zylanica Linn	Do.	Sh o-ST	....	....
750 Oldenlandia biflora Linn	Rubiaceae	H	....	m
751 Oldenlandia coerulea Gamb	Do.	H	....	....
752 Oldenlandia corymbosa Linn	Do.	H	....	m
753 Oldenlandia crystallina Roxb.	Do.	H	....	....
754 Oldenlandia diffusa Roxb	Do.	H	....	....
755 Oldenlandia herbacea Roxb	Do.	H	....	....
756 Oldenlandia trinervia Retz	Do.	H	....	....
757 Oldenlandia umbellata Linn	Do.	H	Sayaver	m,dye
758 Ophiuros exaltatus O. Ktz	Gramineae	..	Kirangupullu	....
759 Oplismenus compositus Beauv	Do.	..		....
760 Opuntie dillenii Haw	Cactaceae	Sh.	Chappati Kalli	m

761	Osbeckia zeylanica Willd	Melastomaceae	H		
762	Ottelia alismoides Pers	Hydrochari-taceae H (aq).	H	....	....
763	Orobanche cernua Loefl	Orobanchanceae	H	(Parasite) on tobacco	....
764	Oxalis corniculata Linn	Geraniaceae	H	Pulikeerai	Veg, m
765	Oxystelma esculentum R.Br.	Ascelepiadaceae	H	Oosipalai	m
766	Pachygone ovata Miers	Menispermaceae	C	Kattukkodi	m
767	Pancratium triflorum Roxb	Amaryllidaceae	H	....	....
768	Pandanus tectorius Sol	Pandanaceae	Sh.	Tazhai	m
769	Panicum brevifolium Linn	Gramineao	H	....	....
770	Panicum montanum Roxb	Do.	H	....	....
771	Panicum Psilopodium Trin	Do.	H	Kalam-pullu, Pattupullu	f
772	Panicum repens Linn	Gramineme	H	Tinai-upullu	f
773	Panicum subeglume Trin	Do.	H	....	....
774	Panicum trypheron Schult	Do.	H		....
775	Parkia biglandulosa	Leguminaesae (Mim)	T (Cult)	....	....
776	Parkinsonia aculeata Linn	Leguminasae (Caes)	T	Pee-velam	o
777	Paspalidium flavidum A Cam	Gramineae	H	Arisi-pullu	f
778	Paspalidium geminatum Stapf	Do.	H	....	f
779	Paspalidium punctatum A Cam	Do.	H	....	....
781	Paspalum scrobiculatum Linn	Do.	(Cult)	Varagu	Cereal, f
782	Paspalum vaginatum Sw	Do.	H	....	....
783	Passiflora foetida Linn	Passifloraceae	C	....	....
784	Pavetta indica Linn	Rubiaceae	Sh	Parattan	....
785	Pavetta thomsonii Brem	Rubiaceae	Sh		....
786	Pavetta tomentosa Linn	Do.	Sh	....	
787	Paronia odorata Willd	Malvaceae	H	Peramutti	m

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788 Paronia zeylanica Cav	Malvaceae	H	....	....
789 Pedalium murex Linn	Pedaliaceae	—	Peru-norinji, Annai-no-rinji.	m
790 Pedilanthus tithymaloides Pot	Euporbiaceae	Sh (Cult.)	Ilai-kalli	o
791 Peltophorum pterocarpum (DC) Backer ex.K.Heyne (Syn. P. ferrugineum Benth).	Leguminosae (case.)	T (Cult.)	....	..
792 Pennisetum typhoides Stapf and Hubb	Gramineae	H (Cult.)	Kambu	Cereal.
793 Pentatropis capensis (L.f) Bullock (Syn. Pentatropis micro phylla W. & A.).	Asclepiadaceae	C	Uppili	m
794 Peperomia pellucida H.B.K.	Piperaceae	H	....	....
795 Peplidium maritimum Wettst	Scrophulariaceae	H	....	....
796 Pergularia daemia (Forsk.) Chior (Syn. Pergularia extensa N.E.B.)	Ascolpiadaceae	C	Veliparuthi	m
797 Peristrophe bicalyculata Nees	Acanthaceae	H	....	m
798 Perotis indica O. Ktz.	Gramineae	H	Nari-val-pullu, Kudirai-val-pullu	
799 Petrea volubilis Linn	Verbenaceae	C. Sh. (Cult).	....	●
800 Petunia notoniana	Solanaceae	H (Cult.)	....	....
801 Phaseolus aconitifolius Jacq.	Leguminosae (pap)	H	Tulukkapayaru	m
802 Phaseolus mungo Linn	Do	H (Cult.).	Ulundu	Dal, m
803 Phaseolus radiatus Linn	Do.	Do.	Pasipayaru	Dal, m
804 Phaseolus trilobus Ait	Do.	Do.	Panipayaru	Manure, f
805 Phoenix farinifera Roxb	Palmaceae	T	Icham	fr
806 Phoenix sylvestris Roxb	Do.	T	Do.	f, m
807 Phragmites karka Trin	Gramineae	Sh.	....	f Thatched mat
808 Phyla nodiflora (L) Greene	Verbenaceae	H	Poduthalai	m
809 Phyllanthus emblica Linn (See Emblica officinalis Gaert).	....			
809 Phyllanthus fraternus Webster (Syn. P. miruri Linn)	Euphorbiaceae	H	Keezhanalli	m

810	**Phyllanthus maderaspatensis Linn**	Do.	H			
811	Phyllanthus polyphyllus Willd	Do.	SH	....		...
812	Phyllanthus urinaria Linn	Do.	H	Sivappu-nelli	m	
813	Physalis minima Linn	Solanaceae	H	Takkali	m, f.	
814	Pilea microphylla Liebm	Urticaceae	H (Cult.)	....	o	
815	Piper betle Linn	Piperaceae	C (Cult.)	Vetrilai	m	
816	Pistia stratiotes Linn	Araceae	H (aq.)	Akasathamarai	m	
817	Pithecellobium dulce Benth	Leguminosae (Mim.) ..	T	Kodukkapuli	t, f	
818	Pittosporum floribundum W & A	Pittosporaceae (pubiaceae)	ST	Tammatta	m	
	Plectronia didyma Kurz (See **Canthium dicoccum (Gaertn.)** Men.					
819	Plectronia parviflora Bedd	Do.	Sh	Karai	**m**	
820	**Pleiospermium alatum** Swingle	**Rutaceae**	Sh	....		
821	Plumbago zeylanica Linn	**Plumbaginaceae** ..	Sh	Chitramoolam	m	
822	**Plumeria alba Linn**	**Apocynaceae**	**T** (Cult).	....		....
823	Pulumeria rubra forma, **acuminata Sant. & Irani ex-shah** (Syn. P. Acutifolia Poiret).	Do. **96**	Do.	Perungalli	m	
824	Poinciana pulcherrima Linn	**Leguminosae (caes)**	**Sh** (Cult.)	**Mayuram**	**o,m**	
825	Polyalthia longifolia Hf & Th	**Annonaceae**	T (Cult.)	**Nettilingam**	**o,m**	
826	Polyalthia cerasoides Hf & Th.	Do.	T	**Nakulsi**		....
827	Polycarpaea corymbosa **Lam**	**Caryophyllaceae** ..	**H**	**Nila-sadachi**	m	
828	**Polygala bulbothrix Dunn**	**Polygalaceae**	**H**	....		....
829	**Polygala chinensis Linn**	**Do.** ..	**H**	**Sirianangai**	**m**	
830	**Polygala javana DC**	**Do.** ..	**U.Sh.**	....		....
831	**Polygonum barbatum Linn**	**Polygonaceae**	**H** (aq)	....		....
832	**Polygonum glabrum Willd**	**Do.** ..	Do.	....		....
833	Polygonum plebejum **R.**Br.	**Do.** ..	Do.	....		....
834	Polygonum pulchrum Bl (Syn. P. tomentosum **Willd**) ..	**Do.** ..	Do.	....		....

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835 Pongamia pinnata (Linn) Merr. Syn. Pongamia glabra Vent.	Leguminosae (Pap)	T	Pungam	o, m.
836 Porana paniculata Roxb	Convolvulaceae	C (Cult.)		o
837 Porana volubilis Burm	Do.	Do.		o
838 Portulaca oleracea Linn	Portulacaceae	H	Puli-keerai	m
839 Portulaca quadrifida Linn	Do.	H	Pasäli-keerai	
840 Portulaca suffruticosa W	Do.	H		
841 Portulaca tuberosa Roxb	Do.	H		
842 Portulaca wightiana Wall	Do.	H		
843 Potamogeton indicus Roxb	Potamogetonaceae	H (aq.)		
844 Pothos scandeus Linn	Araceae	C (Cult.)		
845 Poazolzia articulata W	Urtiaceae	H		
846 Poazolza indica Gaud	Do.	H		
847 Pouzolzia wightii Benn	Do.	H		
848 Premna latifolia Roxb	Verbenaceae	ST	Munnai	
849 Premna tomentosa Willd	Do.	T	Kolakatta	t
850 Premna serratifolia Linn	Verbenaceae	ST	Pey Munnai	
851 Pristimera india (Willd) A.C. Smith	Hippocrateaceae	C.Sh		
852 Prosopis juliflora	Leguminosae (Min.)	T	Seemai-velan	fw
853 Prosopis spicegera Linn	Do.	T	Vanni	f
854 Pseudarthria viscida W &A	Leguminosae (Pap)	U.Sh.		
855 Psidium guajava Linn	Myrtaceae	ST	Koyya	Fr, m.
856 Psoralea corylifolia Linn	Do.	H	Karpogarisi	m
857 Pterocarpus marsupium Roxb	Leguminosae (Pap)	T	Vengai	t, m, f.
858 Pterocarpus santalinus Linn. f.	Do.	T (Cult.)	Senchandanam, Sandana-vengai.	t, m,

859	Pterolobium hexapetalum (Roth) Sant & Wagh (Syn. Pterolobium indicum A. Rich.)	Leguminosae (Caes)	Sh.	Indu		....
860	Pterospermum xylocarpum (Gaetrn.) (Sant & Wagh). (Syn. Pterospermum heyneanum Wall).	Sterculiaceae	T	Polavu		....
861	Punica granatum Linn	Punicaceae	Sh.	Mudulai	fr, m.	
862	Pupalia orbiculata W	Amarantaceae	U. sh	....		....
863	Putranjiva roxburghii wall	Euphorbiaceae	T	Karupali	t, m, o,	
864	Pycren globosus Reichb	Cyperaceae	H	....		....
865	Pycren hyalinus Dom	Do.	H	....		....
866	Pycren oderatus Urb	Do.	H	....		....
	Quamoclit phoenicia choisy *see* Ipomoea heder-ifolia Linn.	Convoluvulaceae	C	Mayir-manickam	o	
	Quamoclit pinnata Roj *see* Ipomoea qamoclit Linn.	Do.	C	Do.	o	
867	Quisqualis indica Linn	Combretaceae	C (Cult.)	Rangoon-malligai	o	
868	Randia dumetorum Lamk	Rubiaceae	Sh.	Madu-karai	m	
869	Randia malabarica Lamk	Do.	Sh.	Kudan		....
870	Randia uliginosa DC	Do.	Sh.	Karei	m	
871	Raphaus sativus Linn	Capparidaceae	H (Cult.)	Mullangi	Veg, m.	
872	Rauvolifa tetraphylla Linn (Syn, R. canescere Linn.)	Apocynaccae	Sh. (Cult.)	....	o	
873	Ravenala madagascarendis Sonn.	Mysaceae	T (Cult.)	Visirivazhai	o	
874	Rhinacanthus nasuta (L) (Syn. R. communis Nees)	Acanthaceae	Sh. (Cult.)	Nagamalli	o, m	
875	Rhizophora candelaria DC	Rhizophoraceae	T (Mangrove)	Sora-punnai	fw, tn.	
876	Rhizophora mucronata Lam	Do.	Do.	Do.		Do.
877	Rhus musorensis Heyne	Anacardiaceae	Sh.	....		....
878	Rhyncosia aurea DC	Leguminosae (Pap)	H	....		....
879	Rhyncosia cana DC	Do.	U. Sh	....		....
880	Rhyncosia minima DC	Do.	H	....		....
881	Rhyncosia nummularia DC	Do.	H	....		....
882	Rhyncosia rufescens DC	Do.	Sh.	....		....
[illegible]	**Ricinus communis Linn**	Euphorbiaceae	Sh. (Cult.)	Ammanakku	oil, m.	

Serial number and name of the Plant. (1)	Family. (2)	Habit. (3)	Tamil name. (4)	Importance. (5)
884 Rivea hypocrateriformis Choisy	Convolvulaceae	C.sh.	....	....
885 Rivea ornata Choisy	Do.	Do.	....	....
886 Rosa demascana Mill	Rosaceae	Sh (Cult.)	Roja	o, m
887 Rotala densiflora Koehne	Lythraceae	H (aq.)	....	....
888 Rotala indica Koehne	Do.	Do.	....	....
889 Rotala rotundifolia koechne	Do.	Do.	....	....
890 Rothia indica (L) Druce (Syn. Rothia trifoliata Pers)	Leguminosae (Pap.)	H	....	....
891 Rottboellia exaltata Linn	Gramineae	H	....	f
Ruellia patula Jacq. See Dipteracanthus patulus (Jacq) Nees	Acanthaceae	U.Sh.	....	....
Ruellia prostrata Poir. See Dipteracanthus prostratus (poir) Nees.	Do.	H	....	....
892 Ruellia tuberosa Linn	Do.	H (Cult.)	..	o
893 Rungia repens Nees	Do.	H	Kodagasalai	m
894 Russelia equisetiformis Schlect & Cham. (Syn. Russelia juncea acc).	Scrophulari aceae	Sh (Cult.)	....	o
895 Russelia equisetifolia	Do.	Do.	....	o
896 Saccharum arundinaceum Retz	Gramineae	H	Pey-karumbu	....
897 Saccharum officinarum Linn	Do.	H (Cult.)	Karumbu	Sugar m
898 Saccharum spontaneum Linn	Do.	H	Nanal	....
899 Saccholopis indica Chase	Do.	H	....	....
900 Saccholopis interrupta Stapf	Do.	H	Tandampullu	....
901 Salicornia brachiata Roxb	Chenopodiaceae	U.Sh.	Umri	m ....
902 Salix tetrapperma Roxb	Salicaceae	T	Vanji, Nir-vanji, Nir-Nochhi	....
903 Salmalia malabarica (DC) Schott & Endl.	Bombacaceae	T	Kattu-ilavu Purani	Softwood, m floss
904 Salvadora persica Linn	Salvadoraceae	T	Alarraathi, Perungoli	m

905	Salvia plebeia R B	Labiatae	H	....	m
906	Samanea Saman (Jack) Merr.—(Syn. Entroloblum Saman)	Leguminosae (Min)	T	Thoongumoonji	o
907	Sansevieria roxburghiana Schultef.	Liliaceae	H	Marul, mottamanji	o, m, fe.
908	Santalum album Linn	Santalaceae	T	Sandanam	t, oil, m.
909	Sapindus emarginatus Vahl	Sapindaceae	T	Ponnangottai	m
910	Sarcostemma acidum (Roxb) voit (Syn. S. brevistigma W & A)	Accelopiadaceae	Sh	Somun	m
911	Sarcostemma intermedium Dene	Asclepiadaceae	Sh	....	....
912	Schlerichera oleosa (Lour oken) (Syn. Schleichera trijuga willd).	Sapindaceae	T	Poolan, Poomaram	m
913	Scilla hyacintha (Roth) Macb r(Syn. Scilla indica Bak).	Litiaceae	H	Sirunarivengayam	m
914	Scirpus articulatus Linn	Cyperaceae	H	....	....
915	Scirpus grossus Linn	Do.	H	....	....
916	Scirpus jacobi C. Fisch	Do.	H	....	....
917	Scirpus squarrosus Linn	Do.	H	....	....
918	Scirpus supinus Linn	Do.	H	....	....
919	Scleria lithosperma Sw.	Do.	H	....	....
920	Scoparia dulcis Linn	Scrophulariaceae	H	....	....
921	Scutia circumcissa Druce (L.f.) (Syn. Scutia myrtina Kura)	Rhamnaceae	Sh.	Tuvadi Konkimullu	....
922	Sebastiana characisa N.Arg.	Euphorbiaceae	H	....	....
923	Secamone emetica R.B.	Ascelepiadaceae	C.Sh.	Sagadam	m.
924	Securinega leucophyrus M.Arg.	Euphorbiaceae	Sh.	Veppula	
925	Securinega virosa Pax & Hopp	Do.	Sh.	....	....
926	Sehima nervosum Stapf	Gramineae	H	Kuraitti	f.
927	Semecarpus anacardiam L & F	Anacardiaceae	T	Shenkottai, Serankotti	m.
928	Senecio tenuifolius Burm	Compositae	H	....	....
929	Snencio vulgaris Linn	Do.	H	....	....
930	Sesamum indicum Linn	Pedaliaceae	H (Cult.)	Ellu	oil, m,

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931 Sesamum prostratum Retz	Pedaliaceae	H	....	....
932 Sesbania aculeeta Poir	Leguminosae (Pap)	H	....	....
933 Sesbania aegyptiaca Pers	Do.	T	....	....
934 Sesbania grandiflora Pers.	Do.	T (Cult)	Agathi.	Veg. m.
935 Sesbania Procumbens W & A	Do.	H	....	....
936 Sesbania sesban (Linn) Merr.	Do.	Sh (Sembai)	....	m.
937 Sesuvium – portulacastrum Linn	Aizoaceae	H	Vangarachi	Veg.
938 Setaria intermedia R & S	Graminaeae	H	....	....
939 Setaria italica Beauv	Do.	H (Cult).	Tinai	Cere ..
940 Setaria pallidifusca stapf & Rubb	Do.	H	....	f.
941 Setaria verticillata Beauv	Gramineae	H	....	f.
942 Sida acuta Burm	Malvaceae	H	Vattathiruppi	m.
943 Sida alba Linn (Syn. Sida spind‸a Linn.)	Do.	H	....	....
944 Sida cordifolia Linn	Do.	H	Nila-thunthi	m.
945 Sida rhombifolia Linn	Do.	H	Tenacham	m.
946 Sida veronicaefolia Lam	Do.	H	Palampasi	m.
947 Siegesbecki‸ orientalle Linn	Compositae	H	....	m.
948 Smilax prolifera Roxb	Liliaceae	C	....	
949 Smilax zeylancia Linn	Do.	C	....	m.
950 Solanum indicum Linn	Solanaceae	U.Sh.	Peppara-mulli	m.
951 Solanum melongena Linn	Do.	U.Sh. (cult)	Kathiri	Veg. m.
952 Solanum higrum Linn	Do.	H	Mana-takkali	Veg. m.
953 Solanum pubescens Willd	Do.	Sh.	....	....
954 Solanum surattense Burm f. (Syn. S. Xenthocarpum S & W)	Do.	H	Kandan-kathiri.	m.

955	Solanum torvum SW.	Solanaceae	Sh.	Sundai	Veg.
956	Solanum trilobatum Linn	Do.	C	Thooduvalai	m.
957	Solanum verbascifolium Linn	Do.	Sh.	....	....
958	Sonchus oleraceus	Compositae	H	....	....
959	Sopubia delphinifolia G. Don	Scrophulariaceae	H	....	....
960	Sonneratia apetala B. Ham.	Sonneratiaceae	T (Mangrove)	Maram-maram	....
961	Sorgum helepense Pers.	Gramineae	H	Kattu-cholam	....
962	Sorghum Spp.	Do.	H (Cult.)	Cholam	Cenerals.
963	Sphaeranthus amaranthoides Burm. f.	Compsitae	H	....	....
964	Sphaeranthus indicus Linn	Do.	H	Kottai-karandai	m.
965	Sphenoclea zeylanica Gaertn	Campanulaceae	H (Aq)	....	....
966	Spilanthes paniculata Wallex Dc. (Syn. Spilanthes acmella Merr.)	Compositae	H	....	m.
967	Spinifex littorens Merr.	Gramineae	Sh.	Ravanan-meesai	....
968	Spondias pinnata Linn f. Kurz (Syn. S. mangifera Willd)	Anacardiaceae	T	Mambulichi	m.
969	Sporobolus coromandelianus Keath	Gramineae	H	....	....
970	Sporobolus diander Beauv	Do.	H	....	....
971	Sporobolus tremulus Kunth	Do.	H	Uppuruthnampullu	f.
972	Sporobolus virginicus Kunth	Do.	H	....	....
973	Sporobolus wallichii Munro	Do.	H	....	....
974	Stachytarpheta urticaefolia (Salish) Sims (Syn. S. indica Vahl).	Verbenaceae	H	....	....
975	Stemodia viscosa Roxb	Scrophulari-aceae	H	....	....
976	Stencsiphonium parviflorum T. And	Acanthaceae	Sh	....	....
977	Stenosipho ium Setosum T. And	.....		....	....
978	Sterculia foetida Linn	Sterculia ceae	T	Kavalam, Kudiraipudukku.	....
979	Strebulus asper Lour	Moraceae	T	Pirai, pirasu	m.
980	Striga asiatica (L) O, Kunt. (Syn. Striga intea Lour)	Scrophularia aceae	H	(Parasite)	....

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981 Striga densiflora Benth	Scrophulariaceae	H	(Parasite)	....
982 Striga euphrasioides Benth	Do.	H	Do.	....
983 Strobilanthus consanguireus C.B. Clarke Var. hypolencus C.B. Clarke.	Acanthaceae	Sh.	....	....
984 Strychnos nux-vomica Linn	Loganiaceae	T	Etti	m.
985 Strychnos potatorum Linn f.	Do.	T	Tettan-Kottai	m.
986 Stylosenthes mucronta Willd	Leguminosae (Pap.)	U.Sh.	....	....
987 Suaeda maritima Dum	Chenopodiaceae	H	Unri.	....
988 Suaeda mencica Forsk	Do.	Sh.	Do.	....
989 Suaeda nudiflora Moq.	Do.	U.Sh.	Do.	....
990 Swietenia mahagoni Linn	Meliaceae	T (Cult)	Mahagani	t, o
991 Synostemon bacciforme (L)	Webster Euphorbiaceae	H	....	....
992 Syzigium cumini (Linn) Skeels (Syn. Syzigium jambolanum DC)	Myrtaceae	T	Naval	fr. t.
993 Tabebuia rosea	Bignoniaceae	T (Cult)	....	o
994 Tamarindus indica Linn.	Leguminosae (caes)	T (Cult)	Puli	fr.
995 Tamarix dioica Roxb	Tamaricaceae	T (Cult)	....	o
996 Taxillus heyneanus (Schult) Danser	Loranthaceae	Sh (Parasite)	....	....
997 Tectona stans (L) H.B.K.	Bignoniaceae	Sh (Cult)	....	o
998 Tectona grandis l. f.	Verbanaceae	T (Cult)	Tekku	t
999 Telanthera ficoidea Moq.	Amarantaceae	H (Cult)	Semmai-ponnan kanni	o,Veg.
1000 Tephrosia nirta Ham	Leguminosae (pap)	U.Sh	....	....
1001 Tephrosia procumbens Ham	Do.	H	....	....
1002 Tephrosia purpurca Pers	Do.	U.Sh.	Kattu-kolingi	m
1003 Tephrosia spinosa Pers	Do.	Sh.	....	....
1004 Terminalia arjuna W & E	Combretaceae	T	Marandu	m
1005 Terminalia bellerica Roxb	Do.	T	Tani, Akkam	m
1006 Terminalia catappa Linn	Do.	T (Cult)	Nattu-vadam	m

1007	Terminalia chebula Retz	Combretaceae	T	Kadukkai	m
1008	Themeda triandra Forsk	Gramineae	H	Bruigaithattupullu	f
1009	Theriophonum minutum Engl	Araceae	H	....	....
1010	Theriophonum wightil Schott	Do.	H	....	....
1011	Thespesis populnea Cuv	Malvaceae	T (Cult)	Poovarasu	t
1012	Thevetia peruviana (Pers) Schum. (Syn. Thevetia nerifolia Juss).	Apocynaceae	Sh (Cult)	Nanjal-arali	m,o
1013	Thunbergia erecta T. And	Acanthaceae	Sh (Cult)	.. ..	o
1014	Thunbergia fragrans Roxb	Do.	C	....	....
1015	Thumbergia grandiflora Roxb	Do.	C (Cult)	....	o
1016	Tiliacera acuminata Miers	Menisperanaceae	C	....	m
1017	Tinospora cordifolia Miers	Do.	C	Seendil-kodi	m
1018	Toddalia asiatica Lam	Rutaceae	C.Sh	Nulegarenaia	m
1019	Trachys muricats Stend	Gramineae	H	....	f
1020	Tragia cannabina Linn f	Euphorbiacoae	C	....	....
1021	Tragia involucrata Linn	Do.	C	....	....
1022	Tragus biflorus Schult	Gramineae	H	....	....
1023	Trema oreientalis Hl.	Ulmaceae	T	Ambarathi	....
1024	Trewia nudiflora Linn	Euphurbiaceae	T	Aatharasu	Softwood
1025	Trianthema decandra Linn	Aizoaceae	H	....	
1026	Trianthema portulacastrum Linn	Do.	H	Sharunnai	m
1027	Trianthema triquetra Willdex Rattle	Aizoaceae	H	....	....
1028	Tribulus terrestris Linn	Zygophyllacea	H	Nerinji	m
1029	Trichodesma indicum R.Br.	Boraginaceae	H	Kazhedai thumbai	m
1030	Trichodesma zeylanicum R.B.	Boraginaceae	H	....	....
1031	Tricholepis radicans DC	Compositae	H	....	Weed.
1032	Trichosanthes bracteata (Lamk) Voigt (Syn. Trichosanthes palmata Roxb).	Cucurbitaceae	C	Korattai	

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1033 Tridax procumbens Linn	Compositae	H	Mookuthipoondu	....
1034 Trigonella foenum-graecum Linn	Leguminosae (Pap)	H (cult)	Vendayam.	m, pulse
1035 Triumfetta bartramia Linn (Syn. Thomboidea jack.)				
1036 Triumfetta pilosa Roth	Do.	H	....	....
1037 Triumfetta rotundifolia Lam.	Do.	H	....	....
1038 Tylophora indica (Burm. f) Merr. (Syn. T. asthmatica W &A)	Ascelepiadaceae	C	Ney-palai	m
1039 Tylophora fasciculata Ham	Do.	U.Sh.	....	....
1040 Typha angustata B & Ch	Typhaceae	H (aq.)	Sambu	....
1041 Typhonium divaricatum Dene	Araceae	H	....	....
1042 Typhonium flagellioforme Bl. Ex-Engl.	Do.	H	....	....
1043 Typhonium trilobatum Schott	Do.	H	....	....
1044 Urena lobata Linn	Malvaceae	U.Sh.	....	....
1045 Urena sinuata Linn	Do.	Do.	....	....
1046 Urginea congesta W	Liliaceae	H	....	....
1047 Urginea coromandeliana Hool	Do.	H	....	m
1048 Urginea indica Kunth	Do.	H	Nari-vengayam	m
1049 Urochloa panicoides Beauv	Gramineae	H	....	f
1050 Urochola reptans Stapf	Do.	H	Sani-pul	f
1051 Urchola setigera Stapf	Do.	H	....	f
1052 Utricularia aurea Lour. (Syn. Utricularia flexuosa Vahl)	Lentibulariaceae	H (aq).	....	....
1053 Utricularia inflexa Forsk. Var. stellaris (L.F.) Taylor (Syn. U. stellar is Linn.f.	Lentibulariaceae	H (aq).	....	....
1054 Vahlia dichotma (Murr) O. Kzo. (Syn. Vahlia oldenlandioides Rox) Syn. Vahlia viscosa Roxb).	Saxifragaceae	H	....	....
1055 Vallris solancea O. Kze	Apocynaceae	C	....	....
1056 Vallisneria Spiralis Linn.	Hydrocharitaceae	H (aq.)	....	g

1057	Vanda tessellata Hk	Orchidacea	H (epiphyte)	....	....
	Vandellia crustacea Benth (See Lindernia crustaceae (L) F.V. Muller	Scrophulariaceae	H	....	....
1058	Ventilago maderaspatana Gaertn	Rhamnaceae	C.Sh.	Vembadam	m
1059	Verbascum coromandalianum (Vahl.) O. Ktze	Scrophulariaceae	H	....	....
1060	Vernonia cinerea Less	Compositae	H	Sahadevi	m
1061	Vernonia eleagnifolia	Do.	C.Sh. (cult.)	....	o
1062	Vicoa indica DC	Do.	H	....	....
1063	Vigna catiang Walp	Leguminosae (Pap)	H	Karamani	Veg.
	Vinca pusilla Murr (See Catharanthus pusillus (Murr) G. Don.	Expocynaceae	H	....	m.
	Vinca rosea Linn—See Catharanthus roseus (I) Don	Do.	U.Sh.	Patti	m,o
1064	Viscum aticulatum Burm	Loranthaceae	Sh (Pararsiae)	....	....
1065	Viscum capitellatum Spr.	Do.	Do.	....	....
1066	Viscum orientable Willd	Do.	Do.	....	....
1067	Vitex altissime Linn. f.	Verbenaceae	T	....	....
1068	Vitex negundo Linn	Do.	Sh	Nochchi	m
1069	Voluterella divaricata Benth	Compositae	H	....	....
1070	Waltheria indica Linn	Sterculiaceae	U. Sh.	....	....
1071	Wedelia biflora DC	Do.	H	....	....
1072	Wedelia calendulacea Less	Do.	C. Sh.	....	....
1073	Wolffia arrhiza Wimm	Lennaceae	H (Aquatic floating)	....	....
1074	Wrightia tinctoria R.B.r	Apocynaceae	T	Nilapalai	m
1075	Wrightia tomentosa R & Sch.	Do.	T	Wet-palai	m
1076	Xanthium strumarium Linn	Compositae	H	Marlumuthu, Palai	m
1077	Zea mays Linn	Gramineae	H (cult.)	Makkar-cholam	Coreal
1078	Zingiber officinalie Rosc.	Zingiberaceae	Do.	Inji	m

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1079 Zizyphus mauratiana Gaertn (Syn. Z. jujuba Lank).	Rhamnaceae	T	Ilandai	fr. m
1080 Zizyphus nummularia W & A	Do.	Sh	Nari-elandai	....
1081 Zizyphus oenoplia Mill	Do.	C. Sh.	Soorai	....
1082 Zizyphus xylopyrus Willd	Do.	ST	Kottai-elandai	....
1083 Zornia gibbosa Span. (Syn. Zornia diphylla Pers.)	Leguminosae (pap)	H	....	....
1084 Zornja Zeylonenzia Pers	Do.	H	....	....
1085 Zoysia matrella Merr	Gramineae	H	....	....

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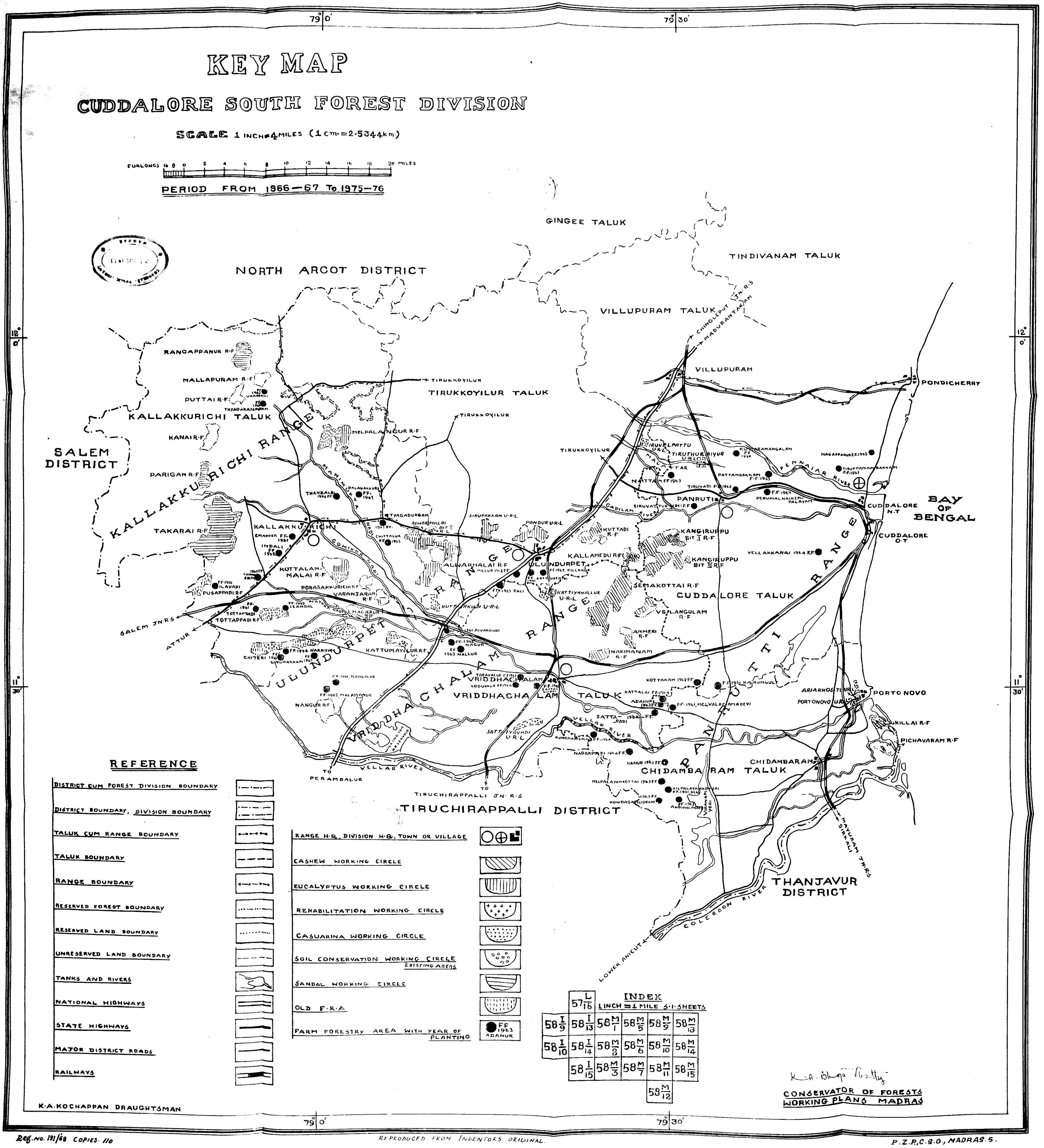

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